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THE ART OF NAVAL WARFARE

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NAVAL WARFARE:

INTRODUCTORY OBSERVATIONS

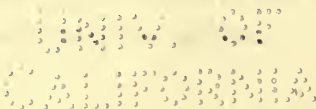


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THE ART OF NAVAL WARFARE:

INTRODUCTORY OBSERVATIONS

BY
ADMIRAL SIR CYPRIAN BRIDGE, G.C.B.



LONDON
SMITH, ELDER, & CO., 15 WATERLOO PLACE
1907

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NAVAL WARFARE:

INTRODUCTION

ADMIRAL SIR HENRY BRIDGE

UNIV. OF
CALIFORNIA

LONDON

SMITH, ELDER & CO., 12 WATERLOO PLACE

1891

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C. B. I.

TO MY OLD MESSMATE AND FRIEND
PROFESSOR JOHN KNOX LAUGHTON, M.A.

HON. FELLOW OF GONVILLE AND CAIUS COLLEGE, CAMBRIDGE
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THIS IS DEDICATED

AS A SMALL TOKEN OF ADMIRATION
OF THE SERVICE THAT HE HAS RENDERED TO HIS
FELLOW-COUNTRYMEN IN EXPLAINING TO US
THE IMPORTANCE OF OUR NAVAL HISTORY
AND IN MAKING US ACQUAINTED WITH THE CAREERS
OF OUR GREAT SEA OFFICERS

PREFACE

THIS book, small as it is, has taken a long time to compose. It is a succinct summary of the result of studies frequently interrupted and extending over a period the length of which will be understood when it is known that the views of the author began to be published (in the 'Edinburgh Review') in 1872. It was hoped that the book would have been ready for the printer two years ago; but several things happened to delay its completion. Postponement of publication has had at least the advantage of permitting the interpolation or addition of some passages suggested by recent occurrences.

The main object is to show the value—indeed, the necessity—of a knowledge of naval

history, which, it is held, ought to be studied not as a mere gratification of antiquarian predilection, but as a record of the lessons of naval warfare. The book might have been given a second title, indicating that it is meant to be an introduction to the technical study of naval history. The author believes that the only effective way of giving instruction in the art of naval warfare is to impart to students a general notion of the art, and to apply the knowledge acquired by them to the investigation of particular wars, campaigns, and sea-fights. It will then be possible to make deductions applicable to particular conditions, no matter how recent in date.

Throughout it has been endeavoured to make it evident that war is essentially a contest of wits, that in it the human element is the most important, and that in war there is always an enemy who may be, and very likely will be, both active and intelligent. Disquisitions on the art of war which do not keep constantly

before the reader's eyes the paramount importance of the human element and the constant force of the probably judicious and energetic action of the enemy, would be as useful as treatises on ballistics in which the resistance of the air or the force of gravity were ignored.

The study of naval warfare, as far as it can be carried with merely the aid of books, will need lengthy treatises relating, explaining, and applying to modern conditions the events of past campaigns. The late Vice-Admiral P. H. Colomb showed us nearly twenty years ago the kind of thing required. Works of the kind will have to be illustrated with charts, plans, diagrams, and mathematical calculations. There does not appear to be much hope of any treatise of the kind being published until an introduction has prepared the way for it. This little book should be looked upon as an attempt to supply the necessary introduction.

London : March 1907.

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THE ART OF NAVAL WARFARE

CHAPTER I

INTRODUCTORY

WAR is organised violence. When peace is broken, the belligerent who has given the most nearly perfect organisation to the forces by means of which he intends to bring violent methods into operation has the best chance of defeating his opponents. Beasts, birds, insects, even fishes, have violent and hasty conflicts; but only men can make war, which is a sustained conflict based on plans devised in accordance with reasoned principles. This is as true of the warfare of savages as it is of that of civilised races. Savage warfare is the more simple because the conditions of savage life are more simple; the weapons are rude and the

number of warriors on any side comparatively small. Nevertheless, savages have both their strategy and their tactics. They prepare their war-material in time of peace, and plan their campaigns when they make war or have it forced upon them. Whilst still in the lower stages of barbarism, man's belligerent methods are restricted to the form of isolated and small surprises. He cuts off stragglers, destroys unguarded dwellings, seizes booty, ruins unwatched crops. It is not till he has risen in the scale of culture that he discerns the distinction between the unexpected in war and mere local and isolated efforts at surprise; not till then does he make plans involving the fighting of pitched battles or look upon the necessity of fighting them as other than an error to be avoided as far as possible. The method of minor localised surprise finds its advocates amongst belligerents of the most advanced civilisation. The advocates do not perceive that, amidst the complexities of hostilities between civilised nations, the difference between an unexpected operation on a great scale and a mere small local surprise carried out by a numerically insignificant force is very wide.

The former lies at the bottom of strategy and tactics ; whilst employment of the latter is a reversion to the less effective processes of primitive savagery.

As there can be no war without men, so the human is the chief element as well as indispensable. From age to age, from one stage of culture to another, men remain essentially the same. They can add to their acquired knowledge ; but in boldness, fortitude, wariness, energy, persistence, the savage of Guadalupe is essentially on an equality with the graduate of Oxford or the General Staff Officer of Berlin. It is at least doubtful if the qualities mentioned can be improved or, as is sometimes said, developed. It is certain that the modes of utilising them can be improved by means of increased knowledge and practice. This is the real sanction on which discipline rests, discipline being not merely ready obedience to orders, but also practical knowledge of the processes of war gained by submission to, and intelligent comprehension of, suitable courses of training. A truly disciplined force is a force which obeys orders with alacrity and knows its work. The main object of every

organiser should be the proper training of the chief element, viz. the *personnel*.

In even the most archaic forms of warfare some discipline must have been necessary. On its instruction or training side it is now more necessary than ever. War is much more complex than it used to be in times not very remote from our own. This is largely, but not exclusively, due to the greater elaboration and complexity of modern war-material. Changes in economic, social, and political conditions have also had their effect. Each nation now knows more of foreigners than it did. It makes itself acquainted with the amount and character of their resources and studies their systems of organisation. This must affect plans, because it brings to light or suggests conditions as to which provision will have to be made. In an age distinguished by the rare occurrence of naval hostilities on the grand scale, and also by an unprecedented display of ingenuity in devising material appliances, the necessity of adopting right methods of imparting a knowledge of the principles of war by sea is especially urgent. There is often so much boldness in design, so much skill in con-

struction, and such great promise of effective use to be found in the naval material of the present day, that there arises a not easily resisted tendency to attribute to it as an element of warfare more importance than it has a right to. The practical result of yielding to this tendency, which often happens, is to treat material and the study of its composition as though it were more important than the human element in war. Therefore, in addition to the difficulty, always great enough by itself, of instructing the *personnel* of an armed force in the right way, we are now confronted by that of having to contest the inclination to exalt unduly the material element.

The latter is highly important, to be sure ; but it must be given its true place in our preparation for the successful conduct of war. We must remain its masters and not become its slaves. To preserve our mastery of it we have to learn enough concerning it to be able to use it intelligently. We should make ourselves acquainted with both its capacities and its limitations. We should never forget that, after all, it is only an instrument or a set of instruments for use by human beings. There

is in existence a vast body of evidence to help us to come to a decision as to the position to be assigned to the treatment of material in a system of naval discipline or training. This evidence is to be met with in the practice of many arts and the pursuit of many sports. A man can be an excellent architect without having gone through a course of bricklaying or stone-quarrying: yet he must know what can be done with bricks and blocks of stone. It is possible to achieve distinction as a rider to hounds without having studied as a veterinary surgeon: but such distinction is only possible to him who knows what a horse can do and what it would be useless to expect of it. The best shots at game, except possibly in very rare and quite exceptional cases, have never spent a single year in a gunmaker's workshop or in a factory of explosives. They must, however, know the ranges beyond which it would be useless to fire their guns and the distance in front of a flying bird of the point at which to aim. The most skilful surgeons do not think of trying to make their own instruments and are not taught to do so, nor to state the percentage of carbon that the steel in those

instruments contains. To become celebrated as a painter it is not necessary to be able to make a box of paints; all that is necessary is to know how to use them intelligently—to understand what the effect of painting with any particular pigment or combination of pigments will be. We may say similar things of the cricketer and his bat, and of the golf-player and his cleek. What is found necessary in each case is familiarity with the use of the instruments of the occupation and intelligent appreciation of their employment. An examination of the evidence available enables us to see the principles that should lie at the base of a system of naval discipline in the true sense.

The end of war is to defeat the enemy; for that is the way to compel him to do what you wish. To gain this end we have to direct the intelligence of men in the utilisation of the material put into their hands. The agent being superior to the instrument, the first need is to see how that intelligence can be best directed. Let it be always kept in mind that the operations of war make the most serious demands that can be made upon the faculties of men. On the success with which those

demands are satisfied national existence depends. The stakes played for in the mighty game are of transcendent value. Our system of learning how to play it must be adopted with the utmost caution. If it furnishes us with no means of ascertaining the extent to which we may count upon coolness, fortitude, and readiness of resource in the *personnel* of our force and who they are that surpass their fellows in those qualities, its breakdown will be certain. Belligerent efficiency is the offspring of suitable preparation in time of peace.

That preparation must be founded on sound principles, and the first task before the naval administrator is to discover them. There is in reality only one way of doing this, viz. by taking experience as a guide. To settle some point of belligerent preparation it may seem open to us to appeal, at will, either to experience or to reason, either to history or to argument. Reason and argument, however, will not enable us to come to a right decision unless they have been raised upon a foundation of experience and history. In naval matters, as in those connected with any practical art — which warfare is—it is impossible to adduce

arguments that do not issue from the recorded or remembered experience of others or from our own. A knowledge of naval history is indispensable both to the administrator who may have to devise a system of organisation and discipline and to those who may be called upon to work the system in actual belligerent operations. Acquaintance with the history of land war, as well as of that waged by sea, will be found useful in the highest degree. Between the great principles of naval warfare and of land warfare there is much similarity and, occasionally, identity. The literature of land warfare is incomparably more copious than that of war by sea ; and because of its very abundance and the consequent great range of choice which it offers to him, some knowledge of it will be of great help to the student of naval warfare.

History can show us both what to follow and what to avoid. It is nearly certain that at all periods of naval administration appeal was made to earlier experience. Nevertheless, the result often enough was that the wrong line was taken. Like that of everything else, the study of naval history, remote or recent, if we

are to derive any benefit from it, must be prosecuted intelligently. We must learn to understand the real significance of each event recorded and how and to what extent it contributed to the success or failure of a belligerent operation. Naval history down to our own day is filled with instances of wrong deductions from observed occurrences. Often enough these wrong deductions have been made by people who were familiar with the history of naval campaigns, some of which had been completed within their own recollection and in some of which they had themselves taken part. We know for how long a time adherence to the rigid line of battle in fleet actions frustrated the efforts of admirals. We also know that this long-continued adherence was largely due to the opinion of men who had themselves seen the rigid line adopted for engagements and who must have also seen the consequences.

The Crimean war, as far as the Western European participators in it were concerned, was practically the siege of a single fortress. All the battles in the Crimea were fought to prevent the besiegers from reaching Sebastopol, or to disconcert them in their siege operations,

or to make them raise the siege and depart. Fortifications and attacks on fortifications there-upon assumed paramount importance in the eyes of many of those who had taken part in or were acquainted with the events of this war. They were so misled by their reading of its course that they introduced into our policy a radically false conception of the defensive system to be adopted by the British Empire. They thought that the best mode of defending the greatest naval and colonial state in the world was to stud its coasts with passive fortifications. Not only were most of these useless, the scheme of defence in accordance with which they were constructed was also so radically unsound that it brought about a great relative decline in our naval strength, thus exposing the country to serious peril, from which the efforts of several years and the expenditure of vast sums of money have alone released it.

In the American War of Secession the combatants on both sides resorted to the practice of producing under-water explosions close to or in contact with the hull of an enemy's ship. This was effected either by laying, in water of no great depth, mines over which

ships passed or which they actually touched, or by conveying the explosive charge in a suitable case, usually at the end of a pole protruding from the bow of a boat, right up to the ship attacked and then exploding it. Several ships having been sunk and others injured by these means, it was assumed that the method was universally applicable, and all countries adopted it regardless of difference in conditions. The plan of defending a port with under-water mines was copied with such little discrimination that it was brought into use at places at which it could not be expected to have any effect but that of keeping friendly ships out. This actually happened in the Franco-German war, in which many of the German merchant vessels that were made prizes were captured outside one of their own harbours, which the lines of real or sham mines prevented them from entering and into which no hostile man-of-war, mines or no mines, would have tried to penetrate. Disregard of difference of conditions, and failure to see what indiscriminating use of a method only effective in special circumstances would involve, led amongst ourselves to the expenditure of great

sums of money on a system of defence which added hardly at all to the security of the Empire and threatened to add greatly to the risks sure to be incurred in war by our most important national industry.

The other method of using an explosive charge to destroy an enemy's ship was not persisted in quite so long. Nevertheless, for several years our men-of-war were furnished with arrangements, to be fitted to both their steam-boats and their rowing-boats, for carrying a pole- or spar-torpedo, which was to be plunged beneath the surface of the water and exploded when the boat so fitted was within a few feet of a hostile ship provided with weapons that could be used with effect against the boat whilst the latter was still hundreds of yards distant. So little did such considerations affect the prevailing belief in the efficacy of the method, or so entirely were they disregarded, that the application of it was extended. Ships expressly designed to carry guns—that is to say, an armament intended for use at ranges measured by hundreds or thousands of yards, were equipped with pole- or spar-torpedoes on the broadside. These were to be used by

bringing the ship to within less than fifty feet of her enemy, whose guns were not supposed to have been silenced, for if they were, torpedoing her would have been unnecessary. Indeed, had the guns been silenced, musketry fire would generally have been sufficient to keep off the intending torpedoer. It took some time before it was perceived that the plan ignored the essential purpose of a gun-armed vessel, and that its adoption would have been equivalent to making a battery of field artillery gallop right up to a body of hostile infantry instead of cannonading it at a suitable range.

The War of Secession offered another example of wrong deduction from observed occurrences. The Federal fleet had no hostile fleet to contend with. Whilst the former counted its ships by hundreds, the number of Confederate men - of - war was insignificant. There were, however, many Confederate shore-batteries open to naval attack. As a means for making attacks of the kind the low free-board monitor had certain merits. Using her effectively against ships would be possible only in special and rare circumstances. The limitations on her effective employment were not

understood, and the low free-board turret-ship was believed to be such an admirable type of fighting vessel that she was introduced into navies generally, even into our own. The naval part of the Secession contest had been almost exclusively confined to coast and river warfare. Most of the rare encounters between ship and ship took place in inland or partially enclosed waters. This, it was assumed, ought to teach us the necessity of having craft specially intended for service of the kind. Notwithstanding all the experience of the British Navy we deliberately elected to prepare for standing on the defensive, and provided ourselves with a collection of vessels for coast defence, a term which has really the same meaning as the short-lived *coastal*.

In the short naval campaign in the Adriatic between the Austrians and the Italians an episode of a single battle was so misunderstood that the ram was given a place above the gun and was proclaimed the predominant naval weapon. On calm consideration this was found to be a higher place than it deserved. It was still retained as at least a weapon of great value. For more than thirty years the

designs of ships of the more important classes were governed by the supposed necessity of fitting them with rams. The addition to the cost of the ships due to this must in the aggregate have been great. It is only just now that the mistake of so affecting ship-designs has been recognised.

Every one of the above-mentioned misinterpretations of the events of naval wars was made by people whose position enabled them to obtain authentic and full information concerning the operations to the course of which they looked for guidance. Their mistakes could not have been due to want of knowledge of the facts, because with that they were well supplied. Also, it could not have been due to want of intellectual capacity, because those in whose hands the power of deciding on matters of naval policy lies are usually the most capable men to be found in the sea-service of their country and can always be justly credited with, at the least, the average ability of their profession. They went wrong, and sometimes wrought long-lasting mischief, not because they did not know what had taken place, but because they had not made themselves familiar

with naval history and had not practised themselves in the process of weighing the relative importance of the different occurrences in a battle or a campaign. Consequently, they were unable to distinguish between the accidental and the fundamental. The age being what it was, their minds were obsessed by a belief in the paramount importance of material, and, owing to their failure to appreciate aright the lessons of history, they had not equipped themselves with the means of resisting the obsession.

In earlier days, when wars were frequent and authentic accounts of them could be obtained at first hand from people who had taken part in them, the formal study of naval history was less necessary than it is now. Nelson, for instance, lived at a period in which men who could speak from personal knowledge of the campaigns of Hawke and Rodney were numerous, and when men who had shared in those of Anson and Boscawen still lived. Traditions from past times were vivid, and their impressive character was heightened by the practical commentaries on them resulting from the frequency of important maritime wars.

There must have been some formal study of naval history in the eighteenth century, because during it a variety of works on the subject were published, which would not have happened had books of the kind not found readers.

There was more tactical study in the British Navy in the century just mentioned than is sometimes believed. Of this there is a good deal of indirect evidence. The study was not carried on in lecture-rooms or classrooms on shore, but afloat and on the high seas. Not only had the naval officers of the age opportunities of seeing strategy and tactics in practical operation or of listening to those who had so seen them, they also had another great advantage over their successors of the present day. The age in which they lived was not one in which there was anything like the almost marvellous development of naval material which has been such a characteristic feature of our own times. Therefore they had not to fight against the tendency to attach undue importance to mere material appliances. There was nothing to conflict with their belief that success in war depends mainly upon qualities of the will and the mind. Though

they did not undervalue the importance of good material, there is abundant proof that they put a right estimate on the human characteristics of courage and intelligence. Indeed we might search our history from the time of Drake to the time of Nelson without finding any trace of a conviction in the Navy that bad strategy and bad tactics could be made into good by the possession of superior material.

If we wish to fit ourselves for the conduct of war, we must understand what has been already done in war. That is to say, we must not only know the events, we must also learn to comprehend their true significance. It has been charged against naval historians, or at least against the best known of them, that they give us little instruction in tactics or strategy. The fault lies not in the historian, but in ourselves. If he records the facts accurately he has done most of that which we have a right to ask of him. It is our business to apply the lessons which a mere statement of the facts conveys. It is for us to determine the merit or the fault of any particular strategic arrangement or tactical operation. The worst way of studying naval history is to read it as a mere

list of occurrences. We must read into the occurrences their right meaning and decide for ourselves how far they affected the result of a battle, the course of a campaign, or the issue of a war. To enable us to do this we should equip ourselves with a knowledge of the principles of naval warfare.

CHAPTER II

MEANING OF STRATEGY AND TACTICS

THE conduct of war may be divided into two branches, viz. Strategy and Tactics. Attempts have been made, never quite successfully, to give the meaning of these terms in brief definitions. Strategy has been defined as the art of conducting war when not in the presence of the enemy ; and tactics as the art of conducting it when in his presence. A vague indication of meaning rather than a true definition tells us that tactics are the use of military forces in combat ; that strategy is the theory of the use of combats for the object of war. So also it has been held that the theatre of war is the province of strategy, and the field of battle the province of tactics. The insufficiency of these definitions soon becomes apparent when the subject is being studied closely. The truth is that the terms do not admit of exact

and at the same time succinct definition ; and the province of one occasionally overlaps that of the other. What the terms really mean will be best understood if we examine the processes, operations, and principles which may be classed under each. Strategy will be found to be the art of compelling your enemy to fight when he is at a disadvantage ; and tactics in like manner will be found to be the art of so disposing or employing your force when in contact with the enemy that you oppose him more effectively than he can oppose you. The vagueness of these explanations is obvious ; but it is only the vagueness of outline of objects seen at a distance which is corrected on closer inspection. So also strategy and tactics will cease to appear vague terms when we have examined them at close quarters and in detail.

Though in their broader aspect land-strategy and sea-strategy have so much in common that the study of the former is useful to the sea-officer, there is a distinction between them as to certain points. Land-strategy is more local in its operation than sea-strategy. The former operates on a more restricted area—that of a few, usually not more than two, contiguous

or adjacent countries, and often enough in only a part of one of these. Sea-strategy, on the other hand, may and sometimes does have the whole ocean for the theatre of its action ; and, generally, naval campaigns, since the cannon mounted afloat has become the chief weapon, have involved the carrying out of operations over a great extent of sea. On both elements the primary objective is the enemy's armed force. On land, what has to be done is to destroy the enemy's army by successful attack and unrelenting pursuit ; at sea, it is his navy that has to be so treated. In campaigns on land effective and sufficiently extended occupation of an enemy's territory—which the destruction of his army has rendered feasible—usually convinces him that he must end the war. In naval campaigns command of all the ocean routes leading to the enemy's country if it were an island would, by the threat of invasion or the complete stoppage of his supplies, also make him wish to end the war ; whilst, if the enemy's country were continental it would seriously impair his resources and at the same time facilitate the conveyance to his shores of a land force which might overrun

and hold most of his territory and compel him to come to terms. Unless one of two antagonists is specially circumstanced, or both are, naval campaigns by themselves are not likely to end a war or cause the complete surrender of one side. A purely naval contest may wear out one belligerent; but the process will be long, and if one side is quite worn out, the other will almost certainly have begun to feel the effects of fatigue. Consequently, as a rule naval strategy should aim at enabling a land army to give the finishing stroke.

There is a strategy of peace as well as of war. The action of the former should never stop. Its essence is preparation for war; and, even without the occurrence of hostilities, it can up to a certain point be made very effective. One of the most considerable maritime Powers of modern times has never taken part in a naval war. Since it has possessed a navy not one of its ships has fired a shot at an enemy's ship in blue water except in an indecisive encounter between two insignificant small craft, and that was five-and-thirty years ago. It has, however, created a great fleet, the possession of which undoubtedly adds

to the weight of the country amongst the States of the world. Had the Power in question been engaged in almost unbroken naval hostilities during the period above mentioned, it would, in all probability, not have reached anything like its present material naval strength.

CHAPTER III

THE STRATEGY OF PEACE

IN every detail the strategy of peace should conduce to furthering the object which we are likely to have in war. The bare statement may seem merely the enunciation of a truism ; but it can be amplified to show that it indicates the necessity of co-ordination of effort in peace time. In undertaking any naval work we ought invariably to ask ourselves, How will this help us in war? This question should come up for answer when we are considering any detail of naval administration, even the most minute and apparently least important. Neglect of this in some intrinsically small matter, if it stood alone, may not be followed by seriously evil consequences ; but an accumulation of many such cases may be the cause of incalculable harm. This is one of the dangers

arising in a long-continued peace : and it is a danger which has to be fought against continuously.

(a) *Need of Simplifying Naval Administration*

As an illustration may be mentioned the modern tendency to increase the amount of what is called paper work. The longer peace lasts, the more do modern navies tend to become, as the French say, *trop paperassier*. Report after report is called for : return after return is ordered to be sent in. Much time is spent in preparing these documents by officers who would be far better employed in other occupations. That, however, is not the least of the evil. People largely occupied in making out returns or filling up forms, and in considering them when received, insensibly contract the habit of attaching too much importance to them. The composition and examination of the documents come to be regarded as important, and then as indispensable, elements of naval administration. Thus the minds of officers are turned in a wrong direction and matters of paramount value are lost sight of. It is not remembered as often as it should be

that if the packet carrying to headquarters all the returns and reports of exercises in a particular fleet or squadron were to go to the bottom with her mail-bags, the efficiency of the fleet or squadron concerned would not be affected one way or the other.

Some of the documents alluded to above cannot be dispensed with. Of such are those which contain information as to the strength of the crews and the state of supplies. These must be furnished, because they are necessary to enable the central administration to make good deficiencies. It is significant that documents of this class have increased in number and elaborate shape very little during a long period ; whilst the returns of exercises and practices have come into existence comparatively recently and have become more and more numerous and detailed in a short time. They are in some measure the effect, and in some the cause, of the dangerous liking for over-centralisation which menaces so persistently the efficiency of modern navies. Almost, perhaps quite, invariably their authors are junior officers of respectable ability but little experience, whom the not yet very long established system of

decreasing the naval *personnel* afloat to add to the part on shore has attached to the administrative departments or to the headquarters of the Specialist schools. They fail to see the mischiefs that over-centralisation can effect, and do not understand that if a captain is fit to be entrusted with the command of a ship, he must, from that very fact, be considered fit to maintain the efficiency of her crew. In nothing is over-centralisation more dangerous than in its inevitable tendency to destroy the faculty of initiative. This danger is now more threatening than ever on account of the increased proportion of sea service—deplorably short as it has become—now passed in fleets and squadrons in which everyone, except the Admiral in command, is under the eye of a superior, and he is in frequent receipt of directions and admonitions from the central office. This must necessarily breed officers unaccustomed to act for themselves, and must add largely to the band of those who, when they are confronted with some unforeseen emergency, expect, and, if they can, ask for, instructions before acting.

The matter deserves deep consideration because it is largely akin to a secret disease,

its processes not being conspicuous and its effects not immediate. Moreover, it supplies its nutriment itself. Uniformity in returns necessarily leads to uniformity in practice and thereby depresses originality ; whereas originality furnishes one of the surest methods of disconcerting an enemy. A partially filled-up form or return is distasteful to the centralising official whose predilections are soon learned. The result is that the columns of a document are too often filled up with the records of work done not because of its inherent value, but because the report of it gives an air of completeness to a highly formal official paper. It is to the prevalence of this administrative method that we can attribute the great increase in the volume and detail of printed regulations and instructions, compiled apparently with the object of providing for every combination of circumstances likely to arise in the Naval Service, a hopeless task which ends only in sending the instructed to his books instead of to his own self-reliance when a serious emergency occurs.

It follows that one of the first principles of the strategy of peace is to simplify administra-

tion. To do this we must avoid over-centralisation, reduce paper-work and printed regulations and instructions to the very lowest indispensable minimum, and see to it that the uniformity which must to some extent be admitted in a disciplined service is not carried far enough to discourage originality and initiative. The spirit by which naval administration is actuated is of the first importance.

(b) Settling the Standard of Naval Force

The next point is to decide the amount of naval force which we can and ought to maintain. Our ability to maintain such a force depends upon the resources of the country ; in these days, when so much can be procured abroad, principally on its pecuniary resources. The strength, as far as the resources available permit, should be proportionate to the interests to be defended and the force by which they are likely to be attacked. The resources available and the strength desired should be put one against the other. When equilibrium has been as far as practicable established, we can set about providing the force. It is the business

of the supreme Government to decide upon the means to be devoted to naval purposes ; and the amount is practically settled by the extent to which the Government is able to induce taxpayers to part with their money. The business of the naval administrator is to employ to the best advantage the sum placed at his disposal. This sum must be divided into three main divisions—one for the provision of the floating material, one for its maintenance, and one for the *personnel*. The money, however great its amount absolutely, being strictly limited, an increase in one division can only be effected by diminishing one or both of the others. This may often be quite permissible ; but the fact that it is inevitable should not be forgotten. The increase on one side and the diminution on the other are likely to be beneficial, if after full consideration it can be shown that they will make for efficiency in war, which should be the only test.

A country may have plenty of brave and hardy men and a large maritime population, but if it has not proper fighting ships it does not have a navy. This demonstrates the importance of having floating material of the right

kind. Long experience of naval war has established a belief, shown by the practice of maritime Powers to be unanimous, that a navy should comprise three great classes of ships, these classes admitting of much internal subdivision. In the period of the great naval wars there were ships-of-the-line, frigates, and small craft. These are now represented by battleships, cruisers, and smaller and special-service vessels. Individuals of the first-mentioned class are intended to fight in large groups, that is to say, in fleet actions; those of the second class are intended for solitary service, or at any rate to fight in only small groups; whilst those of the third are intended, according to the subdivision to which they belong, for a variety of special services.

Each class will necessarily have some characteristics of its own. For instance, whilst all the individuals in the first and second classes and some of those in the third should have a substantial fuel-endurance which no other element should be allowed to trench upon unduly, the armament of the battleship, of course within reasonable limits, should take precedence of her speed. On the other hand,

in the cruiser, speed and radius of action are more important. In the case of some of the small and special-service craft high speed will be of the greatest importance, and every other element, not excepting fuel-endurance, may be subjected to some sacrifice in order to secure it. In providing the floating material of a navy the true duty of the naval constructor, and also of the naval officer, is strictly defined, and its limits should not be over-stepped. No naval constructor has ever reached respectable mediocrity as a strategist or a tactician ; and the history of naval construction is cumbered with instances of the failures, sometimes grievous in their results, of the sea-officers who, with very inadequate preparation, have tried their hands at ship-designing. It is for the sea-officer to say what he wants in a ship, and it is for the naval constructor, as far as it is possible, to embody the requirements of the former in a design.

Whatever be the strength of a navy large enough to include all of the three before-mentioned classes, the number of ships in each class ought to be settled in accordance with a definite principle. How many battleships

must there be? How many cruisers? How many smaller craft? A very common way of settling the number, if not of the individuals in every class, at least of the battleships, is to base it exclusively on the number of those ships possessed by some foreign Power or combination of Powers. This may sometimes make the total approximate to the exact figure required; but the method of calculating it has too much the character of the rule of thumb. We ought to ascertain how we are going to employ in war a particular number of battleships if we have them. We ought, in fact, to consider our battleship force not as a mere matter of relative numerical strength, but as an element in our peace strategy which must rest on sound principles if our strategy in war is to be effective. If we so consider the matter we shall find that important tactical questions have been raised.

We must decide whether, as against a particular enemy or combination of enemies, we could do better with an equal number of similar ships, a smaller number of larger and more powerful ships, or a greater number of ships of moderate size. Of course, a greater number of ships, each more powerful than any belonging

to an antagonist, if it were practicable to have it, would be best; but it is not practicable. First there is the obstacle due to the greatness of the cost of such a plan, because, in even the wealthiest nation, there is a limit to the demands which can be made on the taxpayer's purse. If this did not exist there would be the insuperable obstacle arising from the certainty that every important rival State would so direct its policy of naval construction that it would produce individual battleships superior in dimensions to at least some of ours and with such augmented fighting power as that superiority may be capable of imparting. We should, accordingly, find ourselves when war broke out in the position of having a small, almost certainly a very small, number of ships individually more powerful than those of an antagonist who—on the other hand—would have ships individually more powerful than many of ours. We should have been proceeding in a vicious circle round, but without getting any nearer to, the point which we wished to reach. You cannot defeat any Power strong enough to be a serious rival by the bare process of out-building it. Peace-strategy does

not aim directly at defeating some particular navy. It aims only at that which it can accomplish, viz. putting into your hands the means of so arranging that when war does come you will be more likely to be victorious than your opponent, whoever he may be.

The strength of a cruiser force is usually settled in these days with more regard to strategic requirements. It is usual to take into account what has to be defended as well as that against which defence has to be provided. It follows as a matter of course that any increase in either of those ought to lead to an addition to the cruiser strength. The addition may take the form of increasing either the size of individual cruisers or their total number. To enable us to decide which method to adopt we must appeal to experience, that is to say, to naval history. Without so appealing, attempts to settle important questions of naval warfare are usually hopeless.

When we come to the third class—small craft and vessels for special services—we again encounter the necessity of fixing their strength with reference to their employment in war. Why do we want torpedo-boats? To sink or

injure an enemy's ships. Why do we want destroyers? To prevent or impede the action of torpedo-boats. Why do we want submarine boats? To do, with increase of invisibility, but otherwise under greater difficulties, the same work as torpedo-boats, viz. to sink or injure an enemy's ships. The mode, indeed the possibility, of employing any one of these sections of the class depends upon the accessibility of the object. The radius of action of each section, in other words the distance that can be traversed going out and returning, is restricted because of the amount of the fuel-endurance. This can be increased by enlarging the dimensions. In this, however, a limit is soon reached, because allowing them unlimited dimensions would annihilate the essential characteristics of the craft. Consequently the individuals of the class, if they are to retain their special character, must be regarded as possessing only a moderate radius of action. Anything that keeps beyond the circle described with that radius will be quite safe from their attacks. From this it follows that their number must depend upon that of the hostile vessels which may venture within the area over

which they can act effectively. No doubt it will be difficult to calculate it ; but the problems of naval warfare are rarely easy, and not one of them should be evaded because of the difficulty of solving it. We can, at any rate, conceive an operation the execution of which would bring an enemy into the area in question ; and from our knowledge of what, if in his position, we should do ourselves, we can estimate the amount of force that he would have with him. This would enable us to fix the amount of our own. In war, if he acted as suggested above, we should be compelled to fix it ; so that we may well allow for it in advance.

The more special in character any class of our floating material is, the more necessary it is to settle its strategic value. It is not too much to say that no class of vessel should be admitted into a fleet until its employment in war has been exhaustively considered, and that this is eminently true when the construction of the class leads to the introduction of an innovation. It is more important than ever to respect this principle, because the ingenuity often displayed in some novelty has a great fascination of itself, and that fascination is likely

to blind us to defects in its practical utility as an implement of warfare. A list of appliances adopted, not because of their belligerent value, which it had not been attempted to ascertain, but because of their fascinating ingenuity, and then necessarily thrown aside would be a long one. The readiness with which one appliance credited with slightly more ingenuity than another is allowed to supplant the latter is a proof of the instability inherent in a policy which is directed by a belief in the predominant importance of material rather than in strategical ability.

(c) *Equipment*

Equipment of the ships belonging to a navy must be settled in time of peace. This applies with overwhelming cogency to the branch of equipment that includes weapons. Changing the armament of a fleet in the course of war would exhibit perilous disregard of the maxim inculcating objections to the act of swapping horses when crossing a stream. Perfection is unattainable in human affairs—in the provision of material not less than in other matters. It may be taken as certain that every

weapon put on board a man-of-war can be improved upon, if only in an infinitesimal degree. In war we shall have to be content with the equipment that we start with. A peacetime system of arming ships that admits of frequent changes cannot be a good one. Its great costliness is not the only objection to it. No thoughtful officer can pass through the wilderness of discarded guns of comparatively recent date, covering a vast and much needed space in arsenals, without perceiving that there has been a serious misapplication of funds. The money might have been very much better spent on other branches of the naval force than in making the costly experiments on a great scale which the number of the but little used and now despised weapons clearly implies.

An equally great objection to frequent supplanting of the armament actually put on board ship by something newer is a moral one. Repeated changes on the plea of introducing improvements encourage dissatisfaction on the part of the *personnel* with the instruments put into its hands. Making change after change must breed a belief that even the latest introduction might be improved upon. The system must

be faulty, because it forces the workman to think badly of his tools, and to believe that complaint of their quality justifies any failure on his part. It does still more harm. It tends to produce a conviction that material is all important, and that, if you meet an enemy understood to be better equipped than yourself, you should be held blameless if you take to flight or are defeated. Naval history demonstrates that often—indeed, more often than not—it was the side with inferior material equipment that won. The equipment which really gained a victory was moral and intellectual. In that lay the superiority of the victors. Anything likely to obscure that great truth must be mischievous. When war begins we shall have two sets of enemies to fight, viz. those who withstand us in physical hostilities and the more insidious subjective forces—which are the false impressions due to erroneous standards of thought and practice in time of peace.

All the same, there must be progressive improvement in armament and in all other branches of equipment. The reasons put forward for introducing an improvement are

two: it is either because a naval rival has something believed to be better than we have, or because a more ingenious appliance is proposed. As regards the first, we should satisfy ourselves, before making any alteration, that the superiority with which our rival is credited really exists, and also that no improvement in the methods of using what we have got will bring us up to an equality with him. As regards the adoption of increased ingenuity, we should be convinced that the advance in efficiency claimed for it is great enough to justify the abandonment of everything of the kind already in our hands. Could the cost of adopting it be more usefully incurred in some other way? That is the question to be answered, seeing that what we want in a fighting force is not mechanical ingenuity in itself, but something that will be more likely to help us when we go to war.

Had the matter of altering equipment been looked at in this way, it is unlikely that changes would have been so frequent as they have been. The very frequency of them suggests, if it does not prove, that they were adopted on almost trivial grounds. A change that has itself

to be soon subjected to change cannot have led to any considerable improvement. Consequently it must have been adopted without the results having been fully thought out. Thinking a thing out fully is a laborious process, highly distasteful to many minds, and yet it is the operation of war which is beyond measure more important than any other. It can often be done—indeed, ought to be done—in peace time. The process has to encounter many obstacles. Amongst them is the mental disinclination to engage in it already alluded to, and the enthusiasm of specialists whose vision is so concentrated on the material of their own speciality, that they are prevented from taking in the wide prospect of operations and probabilities which should be constantly before the eyes of him who desires to grasp the principles of naval warfare. As servants, specialists may sometimes be good ; as masters they can never be anything but bad.

(d) Distribution

Distribution of force is another important element of the strategy of peace. It should be recognised that it is not the opposite of con-

centration. That is dispersion. The advantages of concentration are generally so great that dispersion of force should always be kept within such limits that the several fractions can combine readily. In a naval war on a great scale it is likely that there will be more than one point of concentration. The number of points will depend on a variety of things—for example, the number of hostile Powers; the strength, position, and, as far as it can be foreseen, strategic intention of the enemy or enemies; the value, local situation, and character of the interests to be defended; our own strategic plans. If the whole hostile force were concentrated at a single point, it would not necessarily follow that we also should concentrate every ship we possess at one point. If the interests needing defence are distributed widely, we must make allowance for the probability that an enemy would try to detach some part of his force to assail them. As he would have the initiative, which rests with the maker of a new move, our force should be so distributed that we may practically anticipate him or neutralise his advantage in having the start.

It is not necessary for us to keep a portion

of our force at every spot at which the assailant is likely to make his attack. This would be frittering away force—not distributing it. Localisation of naval force commends itself only to those who are unable to see that attempts to make yourself strong everywhere lead to your being really strong nowhere. As has been said already, naval warfare aims at the control of ocean communications, not at the occupation of positions. Control the communications and the positions are secure, and so is everything belonging to you that passes between them. The above considerations bring us to the conclusion that some distribution of force in time of peace is permissible and indeed desirable; also that the fractions should be distributed, not at a number of fixed positions, but in areas of reasonably wide extent. The extent can be approximately defined by taking account of the time required for concentrating within the area either the whole of the group of ships assigned to it, or the portion that could make head against the intending assailant. An illustration of the importance of this may be found in the history of the American Civil War. The whole naval strength of the United States was

concentrated on the Confederate States' coast. Yet the United States had, in their merchant ships, interests on nearly every sea. These were left so entirely without defence that an insignificant number of Confederate cruisers sank and captured as they pleased. Then, after much mischief had been done, the United States began to distribute their force suitably, with the result that the depredations of the hostile cruisers were checked.

In time of peace, distribution of naval force is often governed by considerations which are not strategical and are in themselves contrary to sound strategy. Ships are often kept within certain areas and sometimes virtually localised at certain spots for what are called political reasons. Objections to this can only be made with reservations. Political distribution of naval force, unless it is arranged in flagrant violation of strategic principles, is not all loss. Service in different and distant parts of the world helps to develop or permits the exercise of the faculties of both officers and men. It accustoms them to new scenes and brings them into contact with strange people and customs. It must extend largely their mental horizon.

It confers on them also the priceless boon of sea-service, without which a high state of naval efficiency in war is unattainable. It frequently gives to officers, especially those in command, opportunities of drawing upon their stock of self-reliance and readiness of resource, and thus prevents those valuable qualities from rusting for want of use. Distribution of force in peace is consequently necessary, and can be made advantageous provided that strategic considerations are not entirely neglected when arranging it.

(e) *Shore Establishments*

The construction, equipment, maintenance, and supply of the ships forming a navy hold a prominent place in the naval work of peace. They account for the greater part of the naval expenditure of a country. This of itself helps to enhance beyond its true value the relative importance of material. Men have an inveterate and almost ineradicable habit of estimating value by cost. The latter represents the money value and is not necessarily a measure of the effective value, in practical use, of anything. There is often a wide difference between the cost of

ships of equal efficiency built in different countries at the same date. If the habit mentioned is not kept in check there is great risk of losing sight of the truth that, important in peace time as the work of providing and maintaining the material of a fleet may be, the work of training the *personnel* to be efficient in war fully equals it in importance.

The country which, outside its Government establishments, has resources for building and repairing ships and for manufacturing equipment for them has advantages which it would not be easy to exaggerate. We see proof of this in the eagerness shown by countries not possessing adequate outside resources of the kind to develop or create them. The conditions of a long peace are likely to obscure the probability that in a serious maritime conflict the Government dockyards would have their capabilities taxed to the uttermost in completing the repairs that the ships of a fleet frequently in contact with the enemy may be expected to need. In that case it would be an advantage almost beyond price if there were private industrial establishments to fall back upon for building the ships necessary to keep the naval strength

up to the proper mark. If they are to do this in war they ought to have had previous practice in time of peace.

It is, therefore, sound policy to entrust a large part of the naval construction to private shipbuilding firms or companies. There is good reason to believe that the work in Government establishments is unsurpassed in excellence. It supplies a standard that private constructors and manufacturers ought and, indeed, will generally endeavour to reach. It is often asserted that the Government work is cheaper. This is not likely to be the case, and the arguments advanced in support of the assertion are illusory. In a Government dockyard or factory it may be possible to complete a certain piece of work at a cost, say, five-and-twenty per cent. less than would be charged for it in a private establishment, but this would not give the whole of the cost in the former. Owing to well-known conditions of naval service it repeatedly happens that some branches of a Government dockyard would be idle if work were not deliberately made for them. The cost of doing this ought properly to be added to that of particular jobs. Giving its full signifi-

cance to that consideration we may believe that, in reality, Government work is much more costly than private work. As it is the duty of the naval administrator to make the funds put at his disposal go as far as possible, economy in expenditure should be a prominent feature of the strategy of peace.

The general principle to be followed in the case of dockyards and similar Government establishments is to form and keep them on the smallest scale compatible with real requirements. No portion of the naval expenditure of a country should be scrutinised more closely or incurred with greater reluctance than that devoted to their creation and expansion. Where the resources of a country admit of recourse to private industry, the desirability of permitting an overflow of work from the Government establishments to the latter should exert unceasing influence upon naval policy. This leads up to the statement of another principle. The number of Government establishments of the kind in question should be kept as small as possible. What is wanted is, not the most we can get, but the fewest that we can manage to do with. This should be

regarded as axiomatic. In a State with many scattered dependencies and vast interests on every sea, naval establishments on shore distant from the headquarters of the fleet are necessities. The creation of them, though on one side it helps to forward naval action, produces on the other side increased naval responsibilities. The establishments must be defended and their communications must be kept open. If they lie upon ocean-routes which, though they were not there, we should have to control in war, keeping open their communications would have been independently provided for. If they do not lie on such routes, the security of their communications becomes an additional task for the force which they are intended to help.

The help that establishments so situated can give must, therefore, be purchased always at considerable and sometimes at unwarrantable cost. This shows the necessity of allowing strategical reasons to govern the selection of positions for these establishments. In some seaports conveniently situated on important ocean-routes there is so great an influx of commercial shipping that to supply its needs

dry docks and repairing-yards have been established by private owners. Where this is the case the creation of similar establishments by the Government may be uncalled for. Endeavours should be made to ascertain how far the private docks and repairing-yards can be expected to meet the needs of the men-of-war resorting to the port; so that money which would otherwise be expended in unnecessary duplication of that which already exists may be saved altogether, or be devoted to the improvement of other parts of the naval force which more urgently require it.

(f) Supply

The supply of fleets must be organised systematically, and the organisation must be adopted in peace, because it will be too late to create it if we wait till war occurs. The more extended the field of operations, the more difficult the work of organising becomes. If the operations of ships cover only moderate-sized areas and require only comparatively short absences from the country in which the headquarters are, the ships can usually be

supplied with the articles they use at the naval ports to which they habitually resort. The exceptions to this will be few. When, however, operations take ships to great distances from the Mother-country from which most of the articles required by them have to come, those articles must either be conveyed to them direct or be deposited at places to which the ships can go without intolerably inconvenient withdrawal from their proper sphere of action. This has given rise to the plan of forming outlying or secondary bases.

This plan or system of secondary bases requires minute examination. It is obvious that withdrawal of a ship from the sphere of action assigned to her in war, however short a time the withdrawal may last, should be avoided if possible. The enemy may become acquainted with the absence of ships, and may thus be able to carry out an operation that would be impossible if they were not away. Though we can convey stores to a ship, remove her sick and wounded and replace them with sound men, and also give her the means of making rather considerable repairs, she may need such repairs that going to a port at which

she can be docked may be compulsory. Whilst there she can complete her stores of every kind, if a dépôt has been established at the port. It would, therefore, at first sight seem justifiable to establish a dépôt of stores at every secondary base at which there is a dock and repairing-establishment. Some stores must be kept there for use in repair work ; and that being so, it may be thought advisable to keep there ships' stores as well.

The question cannot be settled quite so easily as this may seem to indicate. The time at which a ship may need docking or large repairs necessitating a visit to a base-port cannot be calculated in advance even approximately ; whereas we can calculate within moderate limits of error the time at which she will have to replenish her stores. It will be only a lucky chance that cannot be counted on if these times should coincide. We shall, therefore, have to arrange for supplying her with stores quite independently of the arrangements for her possible, but not certain, need of repair. We shall also have to arrange the former independently of the need of her officers and men for refreshment or relaxation ; because

this may be satisfied by the relief of a portion of her crew at a time, if the absence of the ship from her station is undesirable. A ship with four-fifths or five-sixths of her proper crew and the remainder of her complement newly joined would, in almost any circumstances, be more useful than no ship at all. Not only should this plan of relief be organised in time of peace ; it should also be practised.

When a ship must be docked or must undergo extensive repairs we may expect that nothing can be done except send her to a port at which facilities for both will be found. In most cases the necessity of going into dry-dock or of being extensively repaired will occur only at long intervals ; and, if it can be rendered unnecessary for ships to visit bases for other reasons, the service on which they are employed will be greatly benefited, as they can nearly always be on the spot where they are wanted. We must, to bring about this, organise a system of conveying to them everything that they require. A well-organised system of this kind might render us independent of fixed supply bases which have no dry-docks or large-scale repairing-works.

This raises the whole question of fixed supply-bases. If we depend on such bases to replenish the fuel or other consumable stores of ships, we shall have either to send the ships to a base, or deposit in the magazines and store-houses of the place the articles that they will require. It will often be impossible to determine beforehand in time of peace the spot at which it will be strategically most advantageous for us to operate in war. It will in many cases be decided rather by the enemy than by ourselves. The impossibility just mentioned will be particularly likely to confront us in the distant seas in which it is common to establish fixed supply-bases. If we decide to depend upon them, it will be to our advantage to make the centre of the field of operations near to one of our bases. This is so obvious that we may take it for granted that an enemy will perceive it and will refuse to give us this advantage. It is proper when we enter into a conflict to have a sense of our superiority as regards our opponents, but we must not let this induce us to despise them. Always give an enemy credit for a fair amount of intelligence. We may, then, assume that our antagonist will

try to keep us as far from the base on which we mean to depend as his own strategic interests make him think advisable.

Sending ships to a place several, perhaps many, hundreds of miles distant at the short intervals at which replenishment of fuel, for example, would be compulsory, would almost of a certainty be extremely inconvenient and might very probably cause the failure of our campaign. We should—it is hardly to be doubted—have to establish a system of store-carrying between the base and our ships. We should then be landed in the illogical position of having formed a base with its dépôts that will fulfil no other purpose but that of constituting an interruption to our line of supply. No outlying base is—at any rate up to the present—situated where all the articles required by men-of-war are produced. Many outlying bases are situated where none of those articles are produced. The magazines and store-dépôts can only be stocked—and, what is more, can only be kept filled—by sending to them the stores indispensable to the efficiency of ships. If we make any use of the base at all we must land the stores and then re-ship them for

conveyance to the point at which the strategical exigencies of the campaign oblige our men-of-war to be. The base, in fact, may be quite in the wrong place ; and, notwithstanding the expense incurred in installing and defending it, we may after all be obliged to use instead of it a flying base nearer the scene of operations in which we engage.

The alternative is to rely upon an organised system of store-carrying vessels. We see that if we have fixed bases we must send to them the stores that our ships will need. Now, some very important articles of a ship's equipment, warlike or ordnance stores, for example, may be accumulated before the outbreak of war in depôts in such quantities that no probable drawing upon them would exhaust them even in a war lasting for two or three years. Many descriptions of ordnance stores suffer little or no depreciation by prolonged storage or frequent handling due to repeated trans-shipment. Other stores—coal is a conspicuous example—deteriorate from length of storage and perhaps even more from frequent handling. Moreover, the bulk of coal is so great that a supply calculated to last through the activities of war

for but a few months would take up a large space of ground, and any addition to the stock would most likely have to be deposited at spots so inconveniently remote from the point of shipment that the work of sending it to the men-of-war requiring it would be seriously hampered.

The imperishability of any class of stores and the consequent possibility of maintaining at a base quantities of them sufficient to last for a long time will help us but little if the strategic conditions prevent our ships from visiting the base at which they are kept. We shall have to put them afloat again and transport them by sea to the point at which the ships can take them in. Therefore, at the best all that the formation of a fixed supply-base can do for us is to permit us to use a shortened line of communications, viz. that from the base, instead of the much longer one from the home country. If this exhausted the question it might be said at once that the advantages of a shorter line—fewer risks and less to defend—would justify adherence to the base system of supply. It does not, however, exhaust the question because, as above suggested, there

are classes of stores the stock of which, owing to their liability to deteriorate and their great bulk, it will be compulsory to replenish from time to time.

Unless these are produced at the base or in its neighbourhood they must be brought to it from the home country or some other distant locality. Therefore it will be necessary to have a line of communication much longer than the one connecting the base with the immediate field of operations. If we can keep this open for the transport of one class of stores we can keep it open for the transport of another. That we must do our best to keep it open is certain. If in war we fail to control the communications of a place, that place will be likely to fall. If our plans are so bad or our strength so small that we cannot keep away the comparatively inconsiderable hostile force which would be all that was necessary to intercept our store-carriers, still less could we stop the larger force which might find it worth while to make an attempt on the base itself.

The fixed-base method of supplying men-of-war in distant seas seems to be the outcome of a long period of maritime peace. It has

been adhered to for many years because of a very general belief that it was less expensive than the alternative method of conveying stores direct to men-of-war. The expense of the latter is, so to speak, visible; the expense of the base method is concealed. The active movement of numbers of steam store-carriers cannot fail to attract attention and to create an irresistible inclination to say that it must cost a great sum. Unless we happen to be present at the times at which stores kept in depôts are received or issued we are not likely to see them at all. The walls and roofs of store-houses and sheds conceal them. It is only when we calculate the cost of buildings, of landing, depositing, and re-embarking stores; of maintaining the staff supervising their receipt, custody, and issue, and of the defences of the place and of its garrison, which latter must itself be periodically relieved and supplied; it is not till we have calculated all these that we can understand the great costliness of the fixed supply-base system. It is defective both as regards efficiency in war and economy. A prolonged and detailed examination of this branch of peace strategy is amply justified by

the condition that it calls for, and admits of, complete organisation in peace time ; whilst to defer organising it till war begins would be to increase deliberately the difficulties which are sure to confront us at the outset of hostilities.

(g) Medical Department of a Navy

The above applies to the medical department of a navy as well as to its other branches. To be well organised a naval medical department must be capable of expansion when war breaks out. The number of officers and men for whom attendance must be available will then increase largely. Over and above the proportion of persons usually requiring medical care there will be wounded, very likely in large numbers, to be attended to, and provision must be made for coping with the maladies which the stress of war generally produces, at the same time aggravating the conditions by adding to the number of patients. A hospital which the ordinary conditions in time of peace may keep half empty will probably be insufficient to accommodate more than a small fraction of the numbers requiring treatment whilst a great war

is in progress. The objection to the maintenance of huge and half-occupied establishments is great, not only because of its costliness, but also because it fosters habits and ideas likely to impair efficiency. Minds long habituated to an environment of which superabundance of space is a notable condition are liable to be overwhelmed with perplexity when called upon to face a combination of circumstances produced by greatly increased labour and restricted room to work in. Also, the portions of a Government establishment for which there is no real use during protracted intervals of peace will be put to some use or other, however unreal or opposed to the purpose for which the establishment was formed. This has been observed frequently.

The problem of expanding sufficiently the medical department of a navy when war comes will be most effectually solved by the employment of hospital ships in time of peace, provision being made for an increase of their number as soon as hostilities are imminent. Hospital ships steadily worked in peace time will habituate the service to their use in war. This will go a long way towards rendering a

fleet or squadron independent of fixed bases which it may be impossible to form except at inconveniently distant points. It will, perhaps, appear more costly than the plan of establishing government hospitals at fixed bases; but in the first place this is not certain, and in the second place the excess of cost, if any, may be justifiably incurred, because it will be due to the adoption of a plan promising increased efficiency in war.

(h) *Various Naval Services*

Many services performed ordinarily by the officers and men of a navy are not really naval. Some of them would not help directly, and others would not help even indirectly, to effect the purpose for which a navy is maintained, viz. that of defeating the enemy. These services keep members of the *personnel* at the administrative headquarters, in dockyards, in training establishments in harbour and on shore, in surveying ships, in store ships, in hospital ships if manned by naval crews. Most of the services mentioned must be performed in part by those who belong to the naval *personnel*.

It is not at all certain that any but a small infusion of the purely naval element is necessary to their efficient performance, and there are grave objections to making that element large. It will help to improve administrative processes if naval opinion can be consulted at first hand, and this will often be possible only if those who give that opinion are on the spot. If, however, their numbers are so large that many must be withdrawn for duty elsewhere when war threatens or breaks out, they will be taken away at the very time when the need of having their professional opinion would be most urgent, and taken away, be it remembered, from an establishment the members of which had become habituated to relying on that opinion and quite unused to acting without it. That this would intensify the serious difficulties which war is sure to produce will not be doubted. The crowding of naval officers into the various departments of the administrative headquarters of navies is a modern phenomenon, and is due sometimes to the absence of knowledge natural in countries without experience of maritime war, and sometimes to the inverted conceptions of the purpose of a naval

force of which a time of long-continued peace is prolific.

The aim should be to reduce to and keep at the minimum the numbers of the naval *personnel* employed in the services referred to. This does not mean that none should be so employed, but that they should be absolutely and relatively few. The case of the surveying service has particular interest. The making of hydrographical surveys is not a belligerent operation. You can carry it on, for example, even in war time in waters remote from the enemy. As the seas and coasts of the world are more completely surveyed and delineated on trustworthy charts, so the necessity of lending the help of a surveying vessel to a squadron engaged in hostilities tends to disappear. If officers and men are scarce when a war has begun, there will in future be less reason than ever to keep at hydrographical work those who can be ill spared from the more pressing occupation of fighting the enemy. At the same time it is certain that the work of surveying in time of peace should not be put an end to, but should, on the contrary, be encouraged. The prosecution of it gives officers and men

opportunities of bringing into play faculties of great value to a navy in war. Thus it makes for naval efficiency, which would be impaired only if the members engaged in it were allowed to exceed the narrow limit that it would be unjustifiable to pass.

The special services employ sets of people usually designated specialists. The more zealous each one is in the work of his own speciality, the more inclined he is to exalt its importance and extend its influence. These ends would be most effectually achieved by increasing the numbers of the *personnel* attached to it. The administrator, whose servants the specialists properly are, must always be on the watch to see that they do not become his masters. Necessary as it may be, specialism has a tendency to narrow the outlook. To allow specialism to become predominant in an armed force is to reduce that force's efficiency. Specialists differ greatly among themselves, those of one branch holding their own speciality to be superior to any other. They all agree, nevertheless, in extolling the merits of specialism in itself, and the convergence of their action makes it necessary for the administrator, who

ought to control and not be swayed by them, to strain to the utmost his strength of will and put to an extreme test his breadth of view in order that each of them may be kept within the boundaries of his proper province.

(i) *Naval Training*

No element of the naval strategy of peace is more important than the training of the officers and men. The finest war-material would be of little practical value in the hands of those not knowing how to handle it. With respect to this matter of training we should never forget that the true test of its quality can be applied only in war. We must adopt some peace-time tests; but we should adopt them always with the conviction that at the best they are imperfect. Even such an obviously necessary ingredient of discipline as obedience to command exacts from the commanded little self-forgetfulness in quiet times, but it calls for the very highest exhibition of self-devotion under the tremendous stress of the devastating fire of an enemy's guns. This alone ought to bring home to us the great

difference between the circumstances in which training is usually carried on and those in which its results will be tested. The true end of all training is efficiency in war. The further we move away from actual experience of warfare, the more difficult it is to keep this end in sight. Consequently, it demands a great and sustained moral effort to prevent our training from becoming unreal.

We have evidence of this in the almost universally accepted belief that drill and training are convertible terms and mean the same thing. They are, in reality, quite different. Drill is a necessary evil; whilst training of the right kind is good both in itself and in its results. The former aims at the adoption of uniformity and therefore at the suppression of individuality. Nowhere is perfection in drill more nearly attained than in the ballets of the music-hall stage; yet, perfect as it may be there, no one supposes that it indicates belligerent efficiency. The object of training, on the other hand, is to foster individual qualities of the will and mind as well as the physical qualities.

We cannot do without drill; but if we

recognise its essential character we shall be able to give it its true place. It is sometimes said that training should develop the personal qualities of the trained. If by developing is meant creating, people who attribute to training creative power are likely to be disappointed. What it has the power of doing, and if rightly planned will do, is to give opportunities for the exercise of the qualities which will be useful in war. Though no system of training can be expected to implant in any person's moral nature courage or readiness of resource, the germs of which are not already there, it can prevent those qualities from becoming virtually atrophied from want of use. It is not that a man's courage, for instance, will cease to exist if he is not given opportunities for displaying it. It is that sudden confrontation with unfamiliar circumstances will check the immediate exhibition of it. No man does anything for the first time without a certain hesitation which looks like timidity or nervousness. Let him do the thing or something very like it several times over and the signs of timidity no longer appear. His physical courage throughout has remained unaltered. Familiarity has bred in him con-

tempt, not for the operation itself, but for the circumstances in which it is performed. Though training may not succeed in inculcating complete contempt of danger, it can inculcate, by familiarising men with them or others resembling them, contempt of circumstances that make the danger seem greater than it really is.

We cannot, of course, reproduce in peace time all the conditions of battle; but we can familiarise officers and men with some of the general conditions of war and with others not very dissimilar. When sails constituted the mechanism of propulsion, the qualities of physical courage, readiness of resource, and foresight, enabling the possessor to meet undisturbed what could not be precisely anticipated, were frequently called into use in the case of both officers and men. It would be well if some of the priceless training thus imparted could have been retained in these days. To have done so would probably not have been impossible, as is proved by the action of some important Continental steamship companies. As soon as it had been given up in a war-navy, the obligation to find some substitute for it made itself felt. Accordingly, a course of gymnastic instruction

was introduced. This was a distinct admission that a void had been left in the training of the naval *personnel* and that it was absolutely necessary to fill it, even if in order to do so a thoroughly artificial arrangement had to be brought in.

The training wanted is a training for war, and artificial and disconnected courses of instruction are not sufficient to form it. A courageous, self-reliant, and intellectually alert man, who has mastered the essential elements of a naval education, will be a more efficient belligerent if he is also an athlete, or an electrician, or a mathematician, or a linguist ; but it ought to be an indispensable condition that qualifying as any one of these has not been effected at the expense of a man's training as a seaman of a military service. It is not surprising that, after many years of peace, systems of naval training tend to become more and more unreal. The fact that peace has lasted a long time, of itself brings the officers and men of a navy into closer and closer contact with the members of other professions. They can, so to speak, see those professions at work and also the educational processes

necessary for their members. The latter do not see the real work of a navy because it is carried on outside their sphere of observation; and can rarely form a correct idea or picture of the training system necessary to its efficiency. Noting, as they cannot fail to do, the good results of a certain kind of education in the pursuit of several professions, naval officers sometimes assume that that kind must be equally appropriate to their own profession, notwithstanding its fundamental difference from the others. They are likely to persist with this assumption because the educational systems applicable to all professions follow the same line of advance in their earliest stages. What is not fully comprehended is that there is a point at which this uniformity ought to cease, and that the point in the case of the naval profession is soon reached.

In accordance with the law of its being, the active work of a navy will have to be performed on the sea. All attempts to find for it a sphere of operations elsewhere defy this law, and when put to the supreme test are bound to fail. It is quite certain that the operations of naval warfare will not be conducted in the atmosphere

of the schoolhouse and the lecture-room. Let it be admitted that some time must be passed by the members of a sea-going fighting force in those places ; it does not follow that the period spent in them need be long enough to stand in the way of the acquisition of practical and more useful knowledge. In naval training we ought to do our best to familiarise officers and men with as many conditions as possible that they will encounter in war. If we do this we shall have removed some causes of the perplexities which in the moment of trial obstruct the exhibition of the great qualities of courage, self-reliance, and readiness of resource. Therefore the first object of a system of naval education should be to keep down to the very lowest point compatible with efficiency the amount of study devoted to subjects which are not strictly naval.

The true meaning of the term 'education' is often lost sight of. It is not a mere scheme of imparting schoolroom instruction. It is a system of bringing up the youth of a nation, and not with the aid of books alone, for the part that it will have to play in the national life. Some callings are more scholastic than others.

In the former, work at the desk and in the study is of sufficient importance to overtop all the rest. In the less scholastic callings—and the Navy is pre-eminently one of these—desk and study work are of less importance than practical work. There can be no greater mistake than forcing unsuitable methods into the educational system of one profession because they are followed in another and quite different profession.

It is possible to attain intimate familiarity with the sea and its varying conditions by prolonged service in blue water; and the necessary familiarity cannot be attained in any other way. A navy that is familiar with the sea in many aspects and in many parts of the world will have acquired no small part of the knowledge which is indispensable in war. A navy not in possession of that knowledge beforehand, will have to gain it when war has broken out. Consequently it will have two tasks before it instead of one: it must try to familiarise itself with sea conditions as well as encounter its enemy. Thus neglect of practical sea-training will have put it at a grievous disadvantage. The direction first

given to the training of officers and men will exercise an immense influence on them throughout their careers. Let them be so taught at the outset that they will be led to believe that real sea-experience is a comparatively unimportant element in naval training, a sort of by-work, not only not superior to all the other elements combined, but also scarcely on an equal footing with some—let them be so taught at first that they will believe this, and subsequent attempts to eradicate the belief from their minds will be fruitless, except in cases so rare that the general result will not be modified.

The first thing to impress by action as well as by precept on everyone of every rank or rating on his entering a navy is that he now belongs to a service which has no other reason for its existence but real preparation for war, and consequent ability to defeat the enemy when hostilities arise. Let him see as well as hear that, to be really prepared for war and really able to withstand the enemy when war does come, sea experience is absolutely essential, and the foundation of an efficient system of training will have been securely laid. There is not a single thing really indispensable

to a man-of-war's man, whether he be officer or man, which cannot be learned on board ship. Sound views of the true object of a navy having been inculcated, and sea-experience being made obligatory, the other elements of naval training—handling ships, propelling machinery, or weapons; and the art of commanding men, which is of the first importance for a fighting service—will be mastered with relative facility. Provision for the more elaborate instruction of the few officers needed for special posts in a navy can be made without any necessity for interfering with the proper training of the immense majority.

(j) Plans of Operations

The strategy of peace includes the preparation of plans of operations to be undertaken when war begins. It is not needful to have detailed plans or to attempt to allow for every conceivable combination of belligerent circumstances. A minutely detailed plan made out long before the occurrence of the emergency which it is intended to meet is likely to be adhered to notwithstanding many changes that

may have taken place in the meanwhile. It may thus be worse than no plan at all. Plans may be classed under two general headings : offensive and defensive. For some countries the defensive may, in a particular set of circumstances, be advisable ; for other countries the offensive would nearly always, perhaps invariably, offer the best chance of success. Plans should not only deal with the distribution and employment of the fighting force, they should also comprise arrangements for supplying it with all that it would need. This portion of a proposed plan of operations can be drawn up beforehand in detail and with a fair approximation to completeness. The amount of force to be supplied would be known, and most of its requirements for any given period can be calculated with something like precision. Where it would not be possible to compute exactly some of these—for example, requirements in ammunition, the expenditure of which would be largely governed by the action of the enemy—an allowance covering all probable eventualities could be made. The distance over which stores would have to be transported and the time occupied in transporting them and in bringing

the store-carrying vessels back to the ports of supply could be estimated. Calculations as to the foregoing would facilitate conclusions as to the number, character, and individual dimensions of the store-carriers. In settling the number, weather conditions and the probable activity of an enemy's cruisers must be taken into account. What will be essential is that the number of store-carriers required at the point of replenishment should get there, and a percentage in excess of the number despatched should be allowed to meet cases of loss and capture. A properly arranged plan will obviate any prolonged over-accumulation at the replenishing point, because successive detachments of vessels transporting supplies can be diminished as advisable.

(k) Intelligence and Information

Collection and transmission of intelligence as organised in time of peace is likely to have to undergo considerable modification after war has broken out and, indeed, before the actual outbreak. In peace time the collection of intelligence is for the most part conducted by

persons permitted to remain in the country reported upon, who are known to be engaged in obtaining information concerning its defences. The information most easily obtained is that relative to material. Efforts to stop anything being known about the latter are nearly always futile, and official secrecy in regard to it conceals little or nothing from a future enemy, its only effect being to keep the home public in the dark concerning the employment of the money paid by it in the form of taxes. The concealment, however, may check criticism of officials who have so little confidence in their own handiwork that they refuse to submit it to public observation. Consequently secrecy on the particular subject is often a sign of administrative weakness.

As soon as peace is interrupted the recognised collectors of information find their occupation at an end, and they are obliged to leave the country concerning the forces of which they have been called upon to report. It will then soon be seen how relatively unimportant is much of the intelligence which they have transmitted to their superiors at home. It is a good thing to know the number, size, armament,

protection, speed, fuel-endurance, and mode of construction of an enemy's ships. It is of incomparably greater importance to know what his plans of operations are and with what spirit his officers and men will carry them out. Of these the previously resident purveyors of intelligence will be able to tell but little, perhaps nothing. At the same time, intelligence as to an enemy's movements and such information as to his attitude as will help us to divine his intentions are almost indispensable. In all countries government archives—now occasionally published—show that the knowledge referred to has usually been attainable; they will also show that it was not often acquired by members of the naval *personnel* of the country needing it. Common-sense will convince us that when war has begun it will be as impossible for them to acquire it hereafter as heretofore. The information in question will be most needed when the country is involved in a war with a formidable naval rival. In a war of that kind the whole of the naval *personnel* will be wanted to withstand the enemy, and, even if it were thought wise to spare some of the most talented of its members to collect information, the enemy

would take care that they should not station themselves where the collection could be most effectually conducted. The mere fact of their having a naval character would ensure their expulsion, if not a still more thorough mode of putting a stop to their proceedings.

Consequently it is an unquestionable necessity to formulate some system of learning what a future enemy is contemplating, which system would not depend upon the activity of naval attachés or consuls or occasional visits to the country concerned by your own officers and ships. The fact that a system of the kind has been in existence before—as shown by many recent publications—makes it more than likely that it can be arranged again, and the arrangement should be looked upon as an indispensable element in peace strategy.

(1) *Mobilisation*

Mobilisation is usually the last act of peace time. When that is ordered, a challenge, sometimes irrevocable, has been given to the fortune of war. It is obvious that it must be arranged and its details perfected in tranquil

times. The operation is a much more ancient one than is generally supposed. The word is very much newer than the thing indicated by it. Fleets were quickly prepared for war in days when long words had not come into fashion. Mobilisation has now lost much of its true meaning, and the effect of the loss has been mischievous. It is now generally believed to be a purely formal proceeding carried out in peace time in a fashion that would be quite impracticable on the eve of a serious war. It has become more and more a mere show evolution, like an infantry march-past on a State anniversary ; and, as sometimes carried out, no more discloses the real state of readiness of a navy than the latter pompous futility discloses the real condition of an army. To suppose that because forty or fifty per cent. of the ships' crews are kept in barracks and then marched on board them at short notice is to mobilise the fleet would be a dangerous absurdity.

Mobilisation does not mean, and never has meant, moving part of the *personnel* in active service from one place to another. Mobilisation means rendering mobile, that is, calling into active service those sections of the *personnel*

which wise economy in public expenditure leaves in reserve till called out for exercise or really wanted for the defence of the country. They cannot be rendered truly mobile unless the ships also in which they embark are made ready and equipped with their proper stores. To keep in barracks a portion of the officers and men in active service simply in order to march them on board ship smartly is a costly absurdity. Their ships would be manned more quickly than is possible in even the most unreal of show evolutions if they had been kept on board them all the time and the barracks had no existence.

Unless it is constantly borne in mind that true mobilisation means the speedy bringing into active service of the reserves and the rapid equipment of ships in which they embark, efficient preparation for war cannot be hoped for. In that complex production, the modern man-of-war, there must be some hands familiar with the ship's peculiarities of structure and equipment who can direct and instruct the newly embarked portion of the crew. The necessary familiarity which this implies can only be gained by sojourn on board the ship

herself. Reserves may get rusty after long spells on shore. So will the active-service *personnel* if also on shore for long periods; and the fact that those periods are principally passed in barracks and not entirely at the members' own homes will do little to prevent the rust from accumulating. It is of urgent importance that the mobilisation system adopted should be real and not illusory.

As you sow in peace, so you must expect to reap in war.

CHAPTER IV

WAR

(a) *Strategy*

IT is essential to the proper conduct of war that there should be an objective and a plan. Both terms are comprehensive. There may be a main, and perhaps more than one subsidiary, objective ; and a plan may embrace more than one contemplated operation. Everything, however, should be subservient to the prospect of attaining the main objective ; and minor plans should not be incompatible with the execution of the general plan of which they must be but parts. When hostilities are on the point of beginning, we shall find that we have to provide for the defence of our territory at home and in more or less remote parts of the world, and also of our commerce on the sea. It will be perceived at once that if we can

destroy the enemy's navy or reduce it to inactivity both of the above will be secured. This demonstrates the advantage of assuming the offensive and indicates that our aim must be the destruction or rendering *hors de combat* of the naval forces of the enemy. If he were to assemble every single ingredient of his force at a spot known to us, from which he could not get away before we reached it, we might proceed there in suitable strength and engage him. A crushing defeat inflicted by us upon him would virtually end the naval part of the war.

We must not expect an enemy to be so accommodating. He may be trusted to have an objective and a plan of his own. It may be taken for granted that neither of these will be conceived with any other intention but that of frustrating our schemes. A belligerent has sometimes played into his opponent's hands, which is only another way of saying that the strategy adopted by one side in a contest is sometimes bad. Success in war usually, if not invariably, goes to the side whose strategic arrangements are better than those of the other. Good tactics have occasionally, if rarely, re-

deemed bad strategy ; but it is not safe to count upon this. It is better to be in the right in the matter of strategy as well as in the matter of tactics. If we want to be in the right in the former, our plan of operations will have to include proper allowance for our enemy's intentions and proceedings. We must take into account what he is likely to do as well as what we propose to do ourselves. As soon as we begin to attempt this, we discover how great the complexities of a strategic plan are. An enemy who knows his business—a quality with the possession of which it is always well to credit an opponent, at any rate at first—will be likely to do his best to deceive us as to his proceedings ; will, in fact, try to throw us off the scent. In deciding upon our objective, and in devising the plan by which we hope to attain it, we must endeavour to put ourselves in our enemy's position. To do this thoroughly and as regards every detail, is of course not possible ; but the more nearly we can place ourselves at the point of view from which he regards the prospect of hostilities, the greater is our chance of success. One of the qualities which made Nelson what he was, was his power

of gauging the belligerent value of an opponent and of forecasting the kind of thing that he would be likely to do.

It should be remembered that naval warfare, however greatly the offensive may enter into its methods, is essentially and in its ultimate purpose defensive. An aggressive Sovereign or State is a possibility ; but if either makes what may look like unprovoked war on another, it will be found on investigation that a belief in the necessity of defending something—though it be the interests of a dynasty or an existing constitutional or unconstitutional form against internal revolution—has been as much the cause of the movement as a spirit of pure aggression. This will lead us to the conclusion that our plans ought to be defensive, but the means by which they are made operative ought to be offensive. The problem before the naval strategist is to reconcile these seemingly inconsistent demands. We can solve it if we first ascertain what it is that we have to defend, and then in what way offensive measures can prevent or frustrate attacks on it.

(b) *The Three Divisions of Naval Warfare*

The principal naval Powers—those which alone can wage war on a great scale—will have to do their best to keep their home territory secure against attack from over sea, their outlying possessions secure against seizure, and their ocean trade secure against depredations by an enemy. The defensive system falls into these three main divisions, each of which will be found to include more detailed subdivision. The above-mentioned three divisions are called in common speech, coast defence, colonial defence, and defence of commerce. The convenience of these succinct classifications justifies their acceptance.

(c) *Coast Defence, Real and Unreal*

There is, however, great risk of mistake in the use of the first of them. It is often used to indicate mere local arrangements for meeting an enemy's operations against a particular port or a particular section of coast. The necessity of exact and stable terminology in all that concerns naval warfare is conspicuous

in this case. The protection of a particular port or piece of coast-line is really localised or local defence, and it is desirable that it should be always so called. The result of its not having been called by its proper name has been unfortunate even in time of peace. Whole classes of vessels have been added to navies expressly for alleged coast-defence purposes, whereas all the service that they are capable of rendering, in fact all that they were designed to render, is to guard some restricted locality. The sums of money that have been expended on the construction, equipment, manning, and repair of these craft are large, and might have been devoted more beneficially to the increase of the sea-going fleet, which would be able to defend far more effectually any one or all of the particular localities supposed to need separate defence. Loose terminology is a serious enemy to sound strategy. In addition to being a cause of waste of money, it encourages or enforces the adoption of erroneous principles.

*(d) Local or Localised Defence, miscalled
Coast Defence*

This matter of local defence must be considered fully before we can form a true conception of all that is contained in the term 'coast defence' as one of the main divisions of naval warfare. Local defence, of its very nature, must be repeated at many points. If we say that our local defence being naval is mobile and therefore capable of being moved from its usual station to a menaced point, we shall see that two things have to be taken into account—the distance of the point and the time required to cover it. If these are great, the enemy—who can choose for himself the point at which he will operate—will have a good chance of anticipating the arrival of the special defence force by a period long enough to permit of the undisturbed completion of his operation. It is certain that if his capacity for conducting war is such as to make him formidable, he will have done his utmost to ensure this condition. This is not all. A mobile naval defence organisation capable of moving considerable distances in a state of

continuous readiness to encounter an enemy must have respectable sea-going qualities ; but the very fact of its having been designed for local service will have prevented those qualities—though imparted to it at great cost—from being equal to those of a true sea-going force. Therefore if met by the enemy *en route* it would fight at a considerable disadvantage, a disadvantage imposed upon it by its own designers and possessors. That an enemy who knew his business would make arrangements to fall upon the local force whilst travelling to its destination, and to fall upon it with craft of superior fighting efficiency, is not to be doubted.

If the defence organisation is to be still more localised and not intended to move beyond the limits of a restricted area, the various sections of which it is composed must be numerous. The enemy's power of choosing the point of operation will compel this. This raises the question of the advisability of spending money on the multiplication of the sections instead of adding to the sea-going fleet. This is not the only question raised, for we have to inquire also if the deliberate adoption of a

defensive plan, though for only partial application, will not conflict with the general offensive method, which by the adoption mentioned will, at any rate to some extent, have been abandoned to the enemy. It is not to be expected that he will make an attempt upon a coast unless he is satisfied that such an operation will be likely to prove successful. The likelihood of this will depend upon his employing a force suited to encounter on terms favourable to him the local defence craft, whether gunboats, torpedo-boats, or submarine boats. Of the necessity of doing so he will be as well aware as those conducting the defence. If he cannot do it, it will be not because of any necessarily superior efficiency of the local defence craft, but because the demeanour or action of the sea-going fleet of the side whose coast is threatened will have prevented him from reaching the desired point with the amount and kind of force calculated to give him—when he gets there—a fair prospect of success.

(e) The Method of True Coast Defence

We can see that what is often called coast defence, but is really local defence, is only a part of the much greater division of the operations of naval war to which the first name is properly applied. The greater contains the less. Arrangements to secure the former will be most likely to lead to securing the latter. If they are successful, they will certainly lead to it. Whereas a local defence arrangement, even if successful in one place, will not put an end to the power of assailing an opponent's territory possessed by a belligerent whose sea-going force is still formidable. War between great civilised nations is not made up of a series of pin-pricks. A savage may stealthily tomahawk many a sentry or ravage many a maize-patch whilst the owners are sleeping ; but, except he fights with an antagonist as low in the scale of culture as himself, his acts will have little effect upon the course of a war. Similarly, isolated descents upon a coast may be annoying and the cause of alarm amongst non-combatants ; but, beyond exasperating the side assailed, they will have no great effect on hostilities between

nations possessed of navies and meaning to fight on the high seas. Coast defence in its true meaning is the strategic method of counter-acting an enemy's intention of proceeding across the sea to attack territory in serious form.

(f) Defence against Invasion

We may credit an enemy with a determination to spare no effort, to neglect no means that will tend to end the war in his favour. He will avail himself of all the resources of which he can dispose in his desire to force his antagonist to bend to his will. If he disposes of a powerful army, he will do his best to bring it into use in the struggle. If he can put his army into an enemy's country in such force that it can overcome the whole military defence of the latter, he will be the victor in the contest. It is this that will lead him to contemplate invasion. If he is opposed to an insular State, he may try to reduce it to submission in other ways ; but if he thinks invasion possible, he is likely also to think it the more speedy method of gaining his end. This provides him with the motive for attempting an attack on territory,

even insular territory, in serious form. The power of this motive has been revealed in many wars. Nearly always frustrated, sometimes by direct defeat of an expedition, the motive has made itself felt again and again. Its vitality being so marked, an insular State cannot afford to ignore it. Such a State must make provision for rendering invasion of its territory so difficult of execution that the odds will be greatly in favour of the operation being prevented.

To insure this, two elements are necessary. The defending land force must be large enough to compel an invader, if he wishes to give himself a good prospect of succeeding, to come in great strength; and the defending navy must be strong enough to defeat the naval part of the expedition, whether it escorts the invading army or precedes it and endeavours to clear the way for its conveyance to the point of disembarkation. If the intending invader can be compelled to come with a large army if he comes at all, the duration of the preparations that he will have to make is likely to be considerably extended, and prolonged concealment of them rendered difficult to the verge of

impossibility. He will thus have been in effect obliged to disclose his intentions. The first step to be taken to frustrate these will be naval; and if it succeeds the invasion cannot be carried out. This is another way of saying that an over-sea attack on territory in serious form will have been prevented, and that the direct instrument in preventing it has been the defending navy. Therefore our plan of operations must provide for prevention of the above-mentioned kind of attack if attempted. If we bear in mind that our objective should be the enemy's navy, however distributed, the provision will have been made. If we can keep off the more serious danger, we shall also have done a good deal to keep off the less serious one of minor local attacks. The probability of attacks of the latter kind must not be ignored.

(g) Local Attacks or so-called Raids

No command of the sea, no control of communications, is likely to be so perfect that small portions of an assailant's force will not be able to reach his opponent's coast. The

history of warfare shows that attempts to do so on the part of a belligerent who does not command the sea have been rare, and that in the circumstances effective or sustained operations by him are rarer still. Raids, though successful in their early stages, have had little influence on the course of a war as a whole. Nevertheless the annoyance, though it be only annoyance, caused by attacks of the kind considered may cause popular alarm and consequent popular demands for unsuitable strategic measures, and had better be prevented as far as possible. The immediate strategic question is: What classes of defence and what plan of distribution ought we to adopt in order to prevent it? Land defences, chiefly mobile, may be so organised that a hostile disembarkation, if effected, will be opposed by a considerable force. In that case, as in the case of attempted invasion, the assailant, if he really means to disembark, must come with a numerically respectable body of men to be landed. That will render concealment of his movements difficult and will prolong the duration of the disembarkation proceedings. It is not likely that he will choose for the operation in question an

uninhabited or thinly inhabited tract of country containing little or nothing of value ; so that there will most probably be in the neighbourhood of his disembarkation inhabitants to be organised. The organisation of the population capable of bearing arms ought to be completed in advance.

An enemy may indeed contemplate a raid on an anchorage in some thinly inhabited region, the bait alluring him being shipping congregated there. An operation of this kind may be expected to be purely naval ; that is to say, not participated in by any specially brought landing party. If shipping exposed to an enemy's depredations has accumulated at the place, what has been the reason of it ? Merchant ships do not visit uninhabited places for purposes of trade. The accumulation will have been generally caused by a desire for protection from hostile cruisers, and the anchorage under consideration will have been visited as a place of refuge. That character it could not have unless it were provided with defences of some sort. Merchant vessels in war will not go to a place to take refuge except in order to escape capture ; and the occasions on which they will proceed

to it for the purpose are not likely to be many. Besides this, some of these occasions will have arisen in consequence of mistaken apprehensions of an enemy's nearness, of a belief in his being in a menacing position when, in fact, he was a long way off. If we provide localised floating defences for the place, it is almost certain that they will rarely, and probable that they will never, be called into use. Providing them would therefore have led to an erroneous distribution of force. If the practice of calling for orders at a port of little or no commercial importance is continued by merchant vessels in war, the port of call will need defences which otherwise would not be assigned to it, because they would not be wanted for the place itself but for the ships frequenting it. The most costly and probably least efficient form of defence would be a localised naval force. This matter of giving merchant-ships a defended place of refuge or port of call for orders is a particular case of the great division of naval warfare to which the designation 'Defence of Commerce' has been given.

(h) *The Proper Use of Smaller and Special Class Craft in War*

Where the plan of localised floating defence is accepted, the defending force is chiefly composed of smaller craft of special class, such as destroyers used as torpedo-boats, torpedo-boats proper, and submarine boats. If we reject the plan as vicious, are we necessarily to give up all of the craft of the kind just specified? No, we are not to give them up, if useful and truly strategic employment can be found for them. A point is made of this, because the existence and preservation of special craft is often due, not to their utility in strategy or tactics, but to the earnest advocacy of their introduction and continuance by the specialists in whose hands they are generally placed. It is natural, if deplorable, that it should be so. No persons, and, even more, no compact bodies of men actuated by corporate feeling or *esprit de corps*, like to see their particular occupation threatened with abolition. They may indeed, in the case in question, have a higher motive for desiring the perpetuation of an erroneous system of defence. They may think it unexceptionable,

so common is it for specialism in naval and military affairs to narrow the mental horizon and induce its adherents to think that their own speciality is not only admirable in itself, but also all-sufficing.

Their opposition would be a serious thing ; and it will be well if the specialists concerned can be made to see that relinquishing the method of localised floating defence need not bring with it rejection of destroyers and torpedo-boats as ingredients of a naval force. Like all the other ingredients, they should be used offensively. What is called the 'torpedo-boat menace' will be less formidable in local defence than it would be in inspiring the enemy with fears for the safety of his ships in or near his own waters. Recognition of this will enable us to delimit the sphere of operations of the classes of craft mentioned—that is to say, practically to fix their strategic value. Having the craft at our disposal will do us no good unless they can find an objective within their reach, within the distance that they can cover effectively. This means less than half the distance that their fuel-endurance permits them to run. They may be detained some time after reaching the spot

chosen for action, and they ought to be able to get back to a friendly port, perhaps to one more remote than that from which they first started. The greatest distance to which they are sent should not exceed forty per cent. of that represented by their fuel-endurance.

To an unavowed, perhaps not fully realised, conviction of this we must attribute the continuous efforts made to increase the fuel endurance of torpedo-craft of every class. These efforts disclose the benumbing effect on the intellect of the modern trust in the absolute strategic value of material appliances. Increase of the fuel endurance of torpedo-craft is a good thing; but, like other good things, it has its limiting conditions. It has not always been perceived that it is only within a definitely bounded and relatively narrow area that the craft in question can operate alone. Extend the area of their activity and you will have to take the elementary precaution of giving them an escort when they are sent to carry out operations on its frontier. Remark what has been involved. Increase of fuel endurance necessitates increase of size. As the latter in its turn necessitates increase of cost, either the

number of torpedo-craft—the efficiency of which depends largely on multitude—must be reduced or a greater share of the funds at the disposal of the naval administration must be assigned to them. Nor is this all. The crews must be larger, which will add to the demand on the naval funds. Also the escorting vessels rendered necessary by adopting a more extended area of operations will cost money, most likely a great deal ; so that there will be a further subtraction from the money that should be devoted to the maintenance of the sea-going fleet proper, in order to expend it on a branch of the naval force admittedly incapable of rendering more than special and restricted belligerent service. This objection would not be removed were it stated that a rich country can find money enough for both. Abundance of money furnishes no justification for uneconomical management ; and apart altogether from the financial question, there is the even more serious fault of unsound strategical method. Localised floating defence is the weakest form that naval defence can assume. The aim of strategy should be to include its strongest form in any plan adopted.

(i) *The Essential Character of Coast
Defence*

How then are we to devise the coast defence which would ensure us against attacks, coming from over sea, directed against our territory? We must begin by recognising the essentially naval character of the earlier stage of the operation. The first object of the assailant will be to transport an invading army or a respectable landing corps across the intervening area of water. He will be aware that this has to be effected by force. Even when attempts have been made to effect it by the method of evasion—that is, of getting unnoticed past any part of the defender's navy—the assailing expedition has never been without some naval support. This is due to an ineradicable conviction that successful transit cannot be counted on unless means are available for forcibly preventing obstruction. The larger the expedition the more considerable the amount of the supporting naval force is likely to be. The defenders, therefore, must concentrate their efforts on attempts to defeat the assailing navy. If it is defeated, the project

of invasion will come to an end. If an army advancing to the siege of a fortified place is encountered on the way and defeated, the threatened place will not be besieged. The place will have been effectually covered by the victorious army. Similarly a country threatened from over sea will have been effectually defended against invasion by a victorious navy.

Smaller but in themselves not inconsiderable over-sea attacks on territory also can be prevented by naval action. Here, again, we may appeal to the example of operations on land. A division of an army may be sent to seize a position or a town. If it is engaged and defeated, the threatened place is safe for a time. The defeat of the particular division concerned need not, and perhaps will not, have been decisive as regards the general course of the war. Consequently the operation, or one very like it, may be attempted again. Unless it can be shown that the attempt, if successful, will lead only to the virtual neutralisation of the troops employed in it, efforts must be made to frustrate it. If the place threatened is unimportant, and if its seizure would end in nothing more than a fruitless military promenade, ren-

dering useless the troops employed whilst moving to and from it, and remaining at it, their proceedings may be disregarded. Their separation from the main army will probably have given an opportunity for effective concentration against the latter. A place not able to hold out against the hasty attack of a moderately large division may be of sufficient importance to forbid the omission of all arrangements for protecting it. A great maritime State will have several places of that class on its coasts. They will tempt an assailant, and ought to be made as secure as possible against his designs. To give the necessary security we should use the strongest and not the weakest form of defence. It has been pointed out above what the weakest form of naval defence is, viz. the localised. The strongest form can be found only in the employment of a truly mobile sea-going force.

It is desirable to note carefully the important difference between attempted invasion, i.e. an operation on the greatest scale aiming at the overthrow of the whole land defence force of the threatened country, and what may be called divisional attacks on territory. If the

navy clearing the way, accompanying, or otherwise protecting the invading expedition, is decisively defeated there need be little more fear of invasion. The war, as far as that great operation is concerned, will have been ended. The intending invader, even to his own conviction, will, as a consequence of the defeat alluded to, have lost that command of the sea without which the design of invasion is hopeless. With attacks of the other class it is not so. They may individually be stopped either by actual defeat or by a show of superior force; but the stoppage of one will not necessarily prevent attempts at others. Precautions against them must never be relaxed as long as the enemy has still enough force to devote some of it to an operation of the kind. How to give the right form to these precautions is one of the unceasing tasks imposed on the strategist during a naval war. If the defending force is so distributed that a sufficient part of it will never be out of touch of the hostile squadron contemplating a descent on the coast long enough to give the latter time to effect its purpose, and secure itself by retreat or other means, the task will have been satisfactorily

performed. Therefore effectual protection against minor attacks on territory, sometimes called raids, demands not localised defence by special craft, but correct strategical distribution and organisation of an adequate sea-going force in addition to moderate land defences which may be localised. Moderate land defences will not necessarily consist of fixed works or batteries. Mobile bodies of men with guns that can be moved quickly will generally be more formidable to a naval assailant than fixed works ; and, as the latter must have a covering force of more or less moderate size to protect them and their gun-detachments from the onset of a landing party, providing both fixed and mobile defences will often be an unnecessary duplication. Fixed or passive defence against apprehended naval attack has in practice always led to the adoption of a long series of protecting arrangements to enumerate which would be to parallel the jingle of the ' House that Jack Built.' The battery defends the anchorage ; infantry defends the battery ; underwater mines defend the channel ; electric lights and quick-firing guns defend the mines ; a movable force defends the electric lights and the quick-firing

guns. The sea-going naval force, which is sometimes unnoticed, defends the whole.

(j) *Colonial Defence*

What is often called 'colonial defence'—that is, the defence of outlying possessions against naval attack—may be regarded as a distinct division of naval warfare, though in some particulars it is closely allied to the Coast Defence just discussed. With the exception of the Eastern Asiatic territory of Russia and the Sultan's dominions in Arabia, the outlying possessions of every modern Great Power are absolutely or virtually separated from the parent State or metropolitan country by the sea. Again, with the exception of Canada and India, these outlying possessions are also separated by the sea from powerful foreign countries. Consequently, apart from the cases of the two dependencies named—and then only as regards, in each case, one powerful foreign country—attacks, if made upon British outlying possessions, will be of the over-sea kind—the kind that can be rendered extremely difficult or altogether prevented by naval means. Render-

ing an operation difficult will often lead to its being given up. It is in the nature of men when faced by the responsibility for a serious undertaking to see and even to magnify the difficulties. It is equally natural to most men to seek in war the line of least risk, and an operation nearly sure to encounter great difficulties will be less likely to be undertaken than one promising greater ease of execution. It would not, however, be safe to rely on this before the enterprise and energy of the enemy are known, and every reasonable effort ought to be made to prevent altogether the kind of expedition under notice.

The strategic question in this case is: What would be the best means of preventing it? To this the immediate answer is: Providing for the outlying possession exposed to attack the strongest form of naval defence. This answer needs amplification. Localised defence is not necessarily excluded, but only the least effective kind of localised defence. Here, also, as in the case already considered, local mobile land defence will be necessary, and perhaps fixed land defences on a scale proportionate to the probable strength of the assailant. As the

most complete command of the sea obtainable will not render it impossible for individual ships or small squadrons to pass to and fro, the scale of the local defence should be large enough to repel the onslaughts of such antagonists as these. If the enemy cannot send a stronger force, the place will be secure against his attacks. He will therefore be compelled to leave them out of his plan. He may be able to send a force strong enough to give him a good hope of success ; but here, as in the case previously dealt with, the stronger the assailing expedition the less easy it is to prepare it in secret, and so to conceal its movement that it will not be liable to be intercepted on its way.

What is the importance of the particular threatened port in outlying territory ? Supposing that the enemy succeeds in seizing it or in doing it injury too great to be repaired during the war, how will this advance his interests as a belligerent ? Or, to put it another way, what effect would its seizure or dilapidation have on the course of the war ? On the answer to these questions will depend the efforts made by the enemy to attack, and by the other side to defend, the place ; also, the

scale of the enemy's efforts will depend on the amount and character of the defences provided. The matter, then, has to be looked at as follows: The enemy thinks that the capture or ruin of the place will do him good and his opponents harm. If we have taken steps to defend it, he will be still more inclined to think that a successful attack on it will be to his advantage. It will be by the strength of the defences that he will be likely to measure the importance of the place as well as the strength of the expedition to be sent against it. Some places, probably, will seem to him so strong that, unless he is in a position that will enable him to make an attempt on a very great scale, approximating, indeed, to the scale of an invasion, he will not attempt to reduce them. An enterprising belligerent, if he cannot capture a place or destroy the naval establishments situated at it, will have recourse to other methods of decreasing or annihilating its utility for the purposes of war. He will try to prevent the maritime traffic on which its prosperity depends from being continued. This he can do only by naval means, and most effectually beyond the range of localised floating defences.

The best way of frustrating his designs will be to meet him with an adequate sea-going force. If the sea communications of the place are kept open this method of trying to render a place useless for the purposes of war will have failed.

(k) Defence of Commerce

The principles underlying defence of commerce in a maritime war do not differ from those underlying its other branches. They are based on the necessity of keeping communications open. Lines of maritime communication are long, sometimes measuring thousands of miles, and they cease to be open if there is interruption at any point. Every point on a long line is not, however, likely to be the scene of an obstruction. The points at which, independently of the action of a defending force, interruption would of itself be easiest, and therefore to be expected, are comparatively few. Those at which, though less easy, it may still be attempted by an enterprising antagonist are also few. There are other points at which it would be difficult and, if attempted, would bear but scanty fruit. Consequently most lines

of communication, especially the longest, may be divided into three parts, viz. one which lends itself to interruption, another on which attempts at interruption would meet with some intrinsic difficulties, and a third on which those difficulties would be much more serious and any probable profit small. The character of each of the three parts is primarily due to situation.

If part of a line of sea communication or trade-route runs near the ports from which an enemy's cruisers issue and to which they return for refit or replenishment of supplies, it will, as regards that part, offer considerable facilities for interruption, because assailants can reach it soon, can stay upon it a relatively long time, and will have but a short passage to make when homeward bound. Assume any number of days as the measure of a depredating cruiser's fuel-endurance; it is obvious that the shorter time she requires to reach the scene of her depredations and to return from it, the more she will have to devote to her work of injuring commerce. If the part of the line or trade-route in question is much frequented by shipping, every, so to speak, natural condition

will be favourable to the commerce destroyer. It will be the task of the commerce defender to neutralise the advantages thus falling to his opponent. There will be only one way of doing this, viz. by stopping the activity of the cruisers employed to destroy the defender's commerce. Engage and defeat those cruisers, or make them more concerned about their own safety than about capturing merchant shipping, and the task will be achieved. If the depredating cruisers can be encountered immediately on leaving their ports, they will most likely be prevented from reaching the trade-route on which they were intended to operate, and the disturbance of the threatened trade would be averted. It is, therefore, desirable that the commerce-defending men-of-war should be so distributed that hostile cruisers will be met and defeated before they have had time to begin the work of depredation. Failing this, the defenders would render effective service by appearing on the trade-route itself; but their objective should always be the commerce-destroying vessels, for which they should search incessantly. The defenders, of course, are as much subject to conditions of fuel endurance as

the others, and, if the most vulnerable part of a trade-route is more distant from their bases than it is from those of the commerce destroyers, the balance must be redressed by the presence of superior numbers in the particular section of the belligerent area. Provided that the commerce-defending navy is strong enough in cruisers, the superiority derived can be secured by a suitable system of relief and cruising.

The second part of a line of communication, as above mentioned, may be taken as the part where the intending depredator on commerce would find few facilities. It may be too far from his ports to permit his cruisers to remain on it more than a short time, and it may be nearer to the defender's ports than to his own. Also the passage of merchant vessels along the line may occur only at rather long intervals, so that, in view of the short time that a cruiser can remain on it, captures could not be numerous. Moreover, sending the captured vessels in for adjudication, or, if that formality is omitted, preparing them for utilisation, would necessitate voyages protracted enough to increase the likelihood of recapture. Though these may be the conditions, it will not do for

the defending navy to ignore the necessity of giving protection to the commerce on the part of the line considered. The indirect results of commercial losses due to an enemy are sometimes greater than the direct. A few captures reported about the same time weaken confidence in the efficiency of the naval defence, the rate of insurance rises to practically prohibitive figures, and the trade affected suffers to an extent much greater than that measured by the actual captures.

Of the third or remaining part of the line or trade-route, the condition is that it should lie altogether inconveniently for the activity of assailing cruisers or be but little frequented by the defender's merchant ships. In planning an attack on commerce, as in planning one on anything else, the assailant is almost sure to be governed, in giving a direction to his efforts, by a desire to deliver the attack where it will have the best chance of succeeding and success will be most profitable to him. It is not to be expected that he will aim at injuring sea-borne commerce where the difficulties would be great and the returns small if he sees a better way of giving effect to his desires. This goes a

long way towards supplying us with a full explanation of the significant result, expressed in direct losses, of attacks on our maritime trade throughout the Seven Years' War and the long contests with revolutionary and Napoleonic France and the war with the United States of America from 1812 to 1815. In these the trade of our enemies was destroyed, whilst ours suffered a loss of only a small percentage, which was more than counterbalanced by the successive increase. The explanation is that our defensive naval arrangements were so efficient that our enemies could not, without running risks which were prohibitive, carry on the molestation of our commerce where it would have been most effective. On the other hand, when the defensive naval arrangements were badly planned, the losses of our merchant shipping were severe.

It is to be remembered that the principal reason why the maritime commerce was so little injured was that the defending navy was very strong—stronger, absolutely, than that of any single enemy and, virtually, than the combination of enemies' navies. Strength alone is, however, not sufficient. It must be combined

with good plans, as was proved by the case of the War of American Independence, in which our relative strength was sufficient to have protected our trade had it been wisely used. A belligerent's ocean trade will be satisfactorily guarded if his naval strength and the employment of his force are such that he can keep open his lines of sea communications. It has already been shown that defence of outlying possessions renders it necessary to do this, and as open communications are merely communications which an enemy will be rarely permitted to obstruct, keeping them open to ensure security of territory will also ensure defence of the trade plying upon them.

CHAPTER V

THE COMMAND OF THE SEA

THE aim in naval warfare is to obtain command of the sea, an expression which means control of maritime communications—that is to say, of the ocean paths which connect one part of an extensive empire with another, which sea-borne commerce must traverse, and along which belligerent expeditions must proceed. The Power that obtains this control can attack its enemy where it pleases, and evidently the control must be obtained before a great military expedition can be sent across the sea. Inattention to the latter condition has always ended, sooner or later, in disaster. The then General Bonaparte's expedition to Egypt is the classical example of the certainty of the disaster, however tardy in coming it may be, that awaits the belligerent who ventures to ignore the condition in question. Seeming success at first no more

insures a fortunate issue to an undertaking entered on without recognising the condition, than the capture of La Haye Sainte insures the eventual victory of the assailants in a great battle of Waterloo, or than driving a Japanese cruiser flagship out of action insures to the driver's side a great naval victory in the Japan Sea.

Command of the sea has sometimes been obtained without fighting at all. It is then usually the product of the naval strategy of peace which has been directed to gaining and maintaining complete naval supremacy or great predominance, as was the case with the French and British in the Russian (Crimean) war and with the British in the Boer war. It has also been obtained by intimidating an enemy's naval force into inactivity, as occurred in the War of American Independence, when a British fleet was kept in home waters by the Government instead of being sent to prevent a French force from crossing the Atlantic; and also in one phase of the Russian war above alluded to, viz. the Black Sea campaign of 1854, in which, though they did not use it for the purpose, the Russians had a fleet quite equal

to the task of obstructing the transport of the allied armies to the Crimea. It occurred again in the war between Japan and Russia when, with but little fighting, the latter's fleet was intimidated into permitting the passage of a great military expedition from the Japanese ports to the continent. Generally, however, the command of the sea can be obtained only by fighting for it and defeating the enemy's navy.

Having been secured, it not only gives the side which has gained it the power of carrying out great operations that involve crossing the sea, it also deprives the other side of this power. It does not necessarily deprive the latter of the power of carrying out small operations, though it does render their execution very difficult. These, like the sorties of a garrison doomed to defeat in the end, may have local success—just as the sorties may have delayed the eventual victory of the besieging army—but, like them, will be of only moderate importance and will not affect the course of a war in which the struggle for the command of the sea has been decided already. In a single battle success does not fall in equal measure to

every ship of the victorious fleet or to every brigade of the victorious army. An overwhelming victory on land has often been won despite repulses of parts of the winning force ; and, as already intimated, even in naval victories of the crushing Nelsonic type—that of the Japan Sea, for example—some of the victor's ships have been put out of action by the vigour of the loser's defence. It will be seen at once how great is the advantage due to the command of the sea. It leaves one belligerent the widest range of choice in the operations that he can undertake ; whilst the other is restricted to operations of a minor character not decisive of a war, and can engage in these only under great difficulties and with no great hope of success.

How is the command of the sea to be won ? The possession of a navy stronger than your opponent's undoubtedly would help you to win it ; but it will not make the winning certain. That will depend largely on the arrangements, on the plan and its execution. First of all, it is necessary to avoid undertaking more than can be accomplished. He who embraces too much can have only a feeble grip. What is wanted in war is the very strongest grip on

everything taken hold of. In the nature of men two elements commonly strive for the mastery—rashness and timidity. According as one or the other gets the upper hand, so we distinguish a man's disposition or character. Yet there has probably never been, or ever will be, a man in whose nature the presence of both could not be recognised. The bravest has his timid moments, as may be shown by the celebrated test of attempting to snuff a candle with the fingers. The timid can sometimes be goaded into a frenzy of temerity. When the two are properly balanced—that is to say, when the timidity reduces without completely extirpating the rashness—we have the intelligent boldness, mindful of circumstances and far-seeing as to results, which makes the efficient warrior, whether leader or subordinate. The two elements have sufficient affinity to form—when combined in the right proportions—a new compound, viz. courage. Reflecting on this we shall understand the frequency with which over-boldness is disclosed in forming plans and defective resolution in executing them.

The condition will exist on both sides in a war. The enemy is just as likely as you yourself

to form plans which, when it is attempted to carry them out, will be seen to be too comprehensive. He is also just as likely as you are to become discouraged when faced by the difficulties and dangers inseparable from the process of actual execution. It will not be solely or principally physical courage that is deficient, it will be largely moral courage. Defective moral courage is generally another name for fear of responsibility, or inability to avoid the influence which apprehension of probable failure exercises over some natures, not by any means devoid of physical courage, when an important operation is about to be undertaken. Fear of responsibility has also potent influence when operations offering a good prospect of success seem likely to result in heavier loss than had been expected. More than once a promising affair has been turned into a repulse by a commander's too vivid apprehension of the manner in which the news of a victory and a long list of killed and wounded would be received by the opposition Press at home. Success in war will be improbable if the commander has to keep one eye on the demeanour of patriots who prefer staying at home as critics to facing the enemy as

fighters. Your antagonist will be just as much exposed to all this as you yourself. This should always be taken into account, because attributing to an enemy gross inefficiency or preternatural ability is to do yourself harm at the beginning. It is better to credit the enemy with about the same amount of courage and good sense as you believe that you have yourself.

Doing this will permit a more correct estimate of his probable proceedings to be formed. You wish to gain command of the sea. He wishes to prevent you. What would you do if you were in his place? His detailed measures cannot be exactly predicted, but careful investigation of his resources and usual methods, and intelligent study of information, ought to help you to make a fairly accurate forecast of his general intentions. On this you may base your plan, taking care that it is not so rigid that it cannot be modified if the enemy acts in a way differing from that which was expected. This is the essence of strategy—a plan based upon probabilities and admitting of modification when desirable. If the enemy is stronger than you are, he will probably try to crush your naval force as soon as possible, and will concentrate

his own with that object in view. He knows that if you were the stronger this is what you would be likely to do. If he is not as strong as you are, it will be to his advantage to weaken you. He may attempt to do this in two ways. He may anticipate the formal declaration of war by a sudden attack on portions of the force which, with an eye to probable eventualities, you are assembling at your ports or have left in isolated positions. This has been done by most nations ; and, when it has succeeded, their historians glory in it. It is only when it has failed or has been or may be employed against their own side that they stigmatise it as iniquitous. In war, which is the most practical of arts, nothing is gained by calling names. Taking precautions and hitting hard will be much more useful. The other way likely to be tried to weaken a stronger opponent is to induce him to divide his forces in the hope of giving complete protection to all his maritime interests great and small.

Attempts of the first kind may be frustrated by keeping all parts of the force against which they would be directed within mutually supporting distance, and by taking, as regards

the sudden attacks to which unguarded ships lying at anchorage are liable, the precautions that would render operations of the kind futile. Correct appreciation of the essential nature of the period of strained relations is of immense importance. During it the easy-going habits of peace time are no longer permissible, but there is reluctance to resort to the violent methods of war. The period is essentially one of observation and precaution. Discovery of the positions of the probable enemy's forces will enable you to decide where you should station the fractions of your own. It will be your fault if the means of transmitting intelligence and instructions are not open to you quite as much as they are to him. The sudden attacks which, when strained relations are about to change into hostilities, he may try to make upon the ships at your anchorages should be expected, but not dreaded. Do not dread the enemy ; make him dread you. Make him think that you are going to do to him what he would like to do to you and that you will do it first. There will be no insuperable difficulty about this, and it is quite compatible with the respect that should be felt for an

enemy till his qualities have been tested and he is shown not to deserve it, which may never be.

As has been already mentioned, small vessels of special classes can be employed either locally in the defensive or in the offensive. Unless the anchorages at which ships are lying are very open and exposed, they will not be suddenly attacked by the largest ships of an enemy. He will send against the exposed ships his special craft to assail them with torpedoes. If the side to be assailed stands strictly on the defensive, a great part of the assailants' difficulties will have been removed, as they will be allowed to get within striking distance of their object unimpeded. The offensive method of defence promises the best results and ought to be adopted, though passive protective arrangements may have also been prepared. The offensive method can include not only the plan of meeting intending assailants whilst on their way to the scene of operations, but also that of attacking the enemy in his turn at his anchorages.

If the intention of reducing an antagonist's strength by a sudden assault on him at the very outset of hostilities cannot be carried out,

which suitable and timely precautions would make highly probable, the only way in which that antagonist can be virtually weakened is to induce him to divide his forces. If his maritime commerce is large, his merchant-vessels will be scattered over every sea, and it will be safe to count upon the temptation, to which he will be liable, to split up his fleet to protect them. The temptation has been and may again be resisted. Experience has shown that a belligerent can be more effectually tempted to fritter away his strength in divisions by threats of an attack on some spot of outlying territory which, by his local defensive measures during peace, he has declared to the world he thinks important.

The War of American Independence furnished a good illustration of the cogency of this temptation. In that contest the British were not inferior numerically to any one of their opponents; they were rarely defeated in a fleet action, and never decisively; on the contrary, they gained some important victories; yet they were frequently outnumbered at important points, and on the whole were strategically worsted. They tried to embrace

too much, and took the secondary for the most important. In the end they saved a rock and lost a continent. As a purely military operation both might have been saved had the right steps been taken. The performances of their navy when it actually encountered the enemy's made it quite clear that it was bad strategy—erroneous general conduct of the war—not internal inefficiency or bad tactics, that caused their failure. Their enemy had tempted them and they fell. How hopeless in those circumstances would have been an attempt—even if one had been consciously made—to gain command of the sea was established by the fact that a single opponent, on the whole numerically inferior, was able to meet the British fleets in many seas lying far apart with an equal and sometimes a superior force. No wonder British maritime interests suffered and British sea-borne trade declined, that trade which in the two previous great wars and in the subsequent gigantic conflict substantially increased.

A belligerent has rarely started with a more complete command of the sea than the Federals in the American Civil War. Their enemy had

practically no navy. Later in the struggle he got together a few vessels, amongst them three or four commerce-destroying cruisers. With these, though he did not really annihilate, he greatly accelerated the depression of the American mercantile marines, already declining from economic causes. The Federals thought that they could give their foe so much occupation at home that he would not be able to detach any part of his insignificant naval force to prey on undefended commerce elsewhere. Had the war lasted only a few weeks, the result might have justified their supposition, and their experience would have been handed down to future generations as presenting the pattern of strategic arrangement to be followed, so seldom in considering questions of naval warfare do men go beneath the surface. The Civil War turned out to be a contest lasting for years, and the supposition of the Federal strategists was falsified. You cannot gain command of the sea by stiff adherence to a formula.

Formulae are just the things which germinate and wax great in the artificially created atmosphere of lecture-rooms and centralised

public departments. Make your enemy busy at home and he will leave your commerce alone, is a formula that looks well when chalked on a blackboard or used to garnish an official utterance. Pedantry is often endurable until you get to close quarters with it. The enemy so summarily disposed of is likely to have his own views of naval warfare, and to have put some of them into practical shape by dividing his floating material into the classes already enumerated. By so doing he will have provided himself with cruisers of which enough can be assigned to the work of harassing an opponent's ocean trade or protecting his own, without unduly weakening his main force. In this lies the principle that ought to govern a policy of naval construction. That must be fitted for what it has to do. If the floating material includes classes of ships which can be usefully employed in the important, perhaps necessary, work of diverting an opponent's attention to the defence of his maritime trade, and which also can be so employed without considerably reducing the main fleet, we must expect the neat formula given above to prove futile. If, however, the enemy has neglected

the true principle of constructive policy, and therefore does not possess a proper cruising force, but, instead of it, relatively few huge and inferior battleships called cruisers just strong enough individually to make it more than doubtful if detaching them would not unduly diminish the force which a special effort had been made to concentrate—if he has so acted, the formula will probably be justified. Any formula would be justified if the enemy's impolicy led him to play up to it. But all consideration of the processes of naval warfare ought to be based on a belief that your enemy will not commit just the faults that you would like him to commit.

Amongst these would be the detaching of a squadron, or even more than one, with the object of reducing some fortified outlying port of naval value to yourself. If he were to do this he would spoil his concentration, and you might spoil yours if you also were to detach a force to deal with his detachments. If your outlying ports are not strong enough to hold out against assailants for a reasonable time without assistance being sent to them from your fleet, your peace strategy has been grievously

in fault, and the prospect before you when war begins will be a gloomy one. The question may well be asked, What is a reasonable time? It probably lies somewhere between one month and six; but the period in the case of each port will depend upon the particular circumstances. It is to be remembered that the danger most to be apprehended is the severance of the port's communications. If it can hold out after these have been cut for a few weeks, it is certain that before the time has expired the maintenance of their own communications will have become a matter of grave concern to the intending assailants. To this concern will be added that arising from the anticipated appearance of a force specially sent to deal with them. The accumulated effect of the two threats indicated will constitute a strong defence for the port. The real hope of the assailants would lie in an attempt to capture it by a sudden and short-lasting attack. There would be little risk of its falling to this if its garrison had been kept up to the proper strength, and if its defensive arrangements had been constantly maintained in proper working order.

It will be seen that you can afford to disregard the enemy's efforts to make you divide your forces to the extent of materially weakening your concentrated fleet. That will not be materially weakened by the despatch of cruisers of suitable classes to protect your ocean trade. Most belligerent games are such that two can play at them, and it will be open to one side just as much as to the other to try to induce its opponent to weaken his main force by unsuitable dispersion. The earliest stage of hostilities will be full of alluring temptations and equally full of opportunities of displaying astuteness and strength of character in resisting them. Few temptations are likely to prove more alluring than what is often described as striking the first blow. The allurements are all the more subtle because there would be an undoubted, and perhaps very great, advantage in being the first to strike. When stated without conditions the advantage is patent to all, so patent, indeed, that many believe it to be the true object of speedy mobilisation, which is therefore apt to degenerate into a scurry instead of being a deliberate performance, completed with

becoming celerity, but without tumultuous haste. Nothing in war is unconditional. It is no good trying to strike the first blow if the enemy is sure to parry it and may deliver a serious one in return. How the first blow is likely to be met, and what is likely to be the result to each side, must be fully considered before attempting to strike it. It is not at all improbable that the first blow which excites the prospective admiration of some will be limited to a hasty torpedo attack against an inattentive enemy. It is the inattention that will help most to give it a chance of succeeding.

All study of the conditions points to the conclusion that to gain command of the sea concentration of naval force is essential ; but it must be concentration adapted to the circumstances, which will primarily depend on the attitude of the enemy. Learn what that is and arrange your concentration accordingly. To strike in the dark is not to make war ; and it will be as effectual to beat the air as to aim at an enemy whom you cannot see. The impolicy of rigid adherence to the formulæ of text-books and lecture-rooms in circumstances not allowed for therein is evident. When war begins the

first enemy to fight against is not the one that is going to attack or resist you with material means, but the more insidious foe in your own nature which will assail you stoutly with the ideas and habits produced and nourished by the practices of peace. To beat down this formidable foe we must learn what war is; and in time of peace we can learn that only by intelligent study of the history of warfare and by the proper application of the lessons which it supplies. The instruction to be derived therefrom will enable us to perceive that to gain command of the sea we must defeat the enemy's navy. If we can bring it to action and beat it decisively the command of the sea will be ours. If we can drive it into port we shall also have gained the command, but we must mask or watch continuously the ports into which the hostile navy has been driven. The enemy's fleet remains the objective until its destruction or the end of the war.

CHAPTER VI

MARITIME TRADE IN WAR

A COUNTRY which has a great part of its wealth invested in maritime trade—in ships and their cargoes—must make strenuous efforts to insure that trade from receiving intolerable injury at the hands of its enemy. The necessity for this is all the greater when the country in question depends chiefly upon sea-borne imports for the sustenance of its inhabitants and the support of its industrial life. Its case will include that of all other countries less dependent on maritime trade for prosperity or existence, which therefore will not call for separate discussion. In the case of the first, the trade cannot wait for defence measures to be devised at leisure when war occurs. They must be taken at once and must indeed have been prepared before the outbreak of war. It is at the beginning of hostilities that maritime trade—following, with the

inattention to belligerent conditions bred in peaceful times, its ordinary methods—is most exposed to danger. The interval of freedom from molestation which it is customary to allow to an opponent's merchant shipping at the outbreak of war will be made very short when that opponent is specially dependent on its sea-borne trade. The opportunity of inflicting grievous injury on it will seem much too good to be neglected. Also at the beginning of hostilities anxiety as to the security of its maritime interests will be great in a country so conditioned, and the mere apprehension of its being molested will be likely to have a disturbing effect on its commercial affairs. A few captures made by the enemy, though in themselves insignificant, will be likely to intensify the anxiety and deepen the apprehension. The rate of marine insurance has usually risen, and is likely to rise again, when there is uncertainty about the operations of the enemy. This will have the effect of still further disturbing trade. It is not till a war has lasted some little time that it can be shown that, by adopting proper measures, effectual naval protection may be given to merchant shipping, the losses due

to belligerent operations being thereby kept within moderate limits ; on which the rate of insurance may be expected to revert to a figure but little above the normal. It is nearly as important to take immediate steps for the defence of sea-borne commerce as it is for the security of men-of-war assembling at their anchorages.

Defence of sea-borne commerce may be arranged in accordance with several methods. There is the convoy method, or despatch of groups of merchant vessels, each group accompanied by an escort of men-of-war ; the cruising method, or that of keeping so many cruisers on or about the trade-routes that an intending assailant is more likely to be encountered by one or more of them than to pick up prizes ; the method of seeking for every hostile cruiser in order to bring her to action and capture or sink her, or at least force her back into port ; the method of pre-arranged routes, or that of sending merchant ships in groups without escort along certain ocean paths settled by the Government, means being adopted at the same time to meet and give an account of any hostile ships that may try to infest the paths. The last three

methods are really branches of a cruising system. Therefore the strategy of commerce defence will be found in practice to be necessarily based on the convoy method, or the cruising method, or a combination of the two. No method, be it understood, will render every individual merchant vessel secure against the action of the enemy. The utmost that can be done is to keep the number of vessels captured or destroyed by the enemy down to a small percentage of the whole. The respective merits of different methods of commerce defence can be decided only by a reference to the scale of immunity which each affords to the trade defended by it.

We have no evidence collected under modern conditions on which we can base a conclusion ; and preference for one method rather than another will to a great extent be dictated by circumstances, some of a military, some of a commercial character. Brief notice of each method should make it easy to form a useful notion of the conditions involved in its adoption. It hardly admits of question that, independent of considerations of defensive efficiency and looked at as a mere navigating arrangement, the

convoy plan can be more conveniently carried out in these days of steamers than was possible formerly. It is so easy after a little practice for steamers even in large numbers to keep the same speed and steer the same course, that the mere moving of bodies of steam-propelled merchant vessels under convoy of a few steaming men-of-war is a plan of much simplicity. Some sailing ships were much more weatherly than others, and the difference often varied with the strength of the wind and the amount of sail that could be carried. Some ships sailed best with the wind in one relative direction ; others with it in another. There was consequently an immense variety of conditions which rendered it very difficult to maintain regularity of movement in a sailing-ship convoy. It is at least an arguable contention that a steaming escort could more readily come to the defence of any particular merchant ship under convoy than a sailing escort could. Of course the assailant also will have the benefit of steam propulsion. This does not, however, necessarily keep the relative conditions as they were. If, owing to shift of wind, alteration of course, or other cause, the sailing escort had fallen to

leeward, no power on earth could enable it to proceed in the wind's eye had the assailant, as sometimes really happened, cut into a convoy to windward of the guard. A steaming escort can ignore the direction of the wind.

In the age of sails the necessity of waiting after a vessel was quite ready for sea until the wind became favourable was a matter of common experience. Notwithstanding that everyone was habituated to this, the increased delay due to assembling the vessels to be convoyed proved very irksome. Ships that had been waiting at the point of assembly for a considerable time often found that, when a favourable wind did spring up, it could not be taken advantage of because some of the convoy had not arrived. Before their arrival the wind might, and frequently did, become foul again. When at last the convoy started, owing to the varying qualities of the vessels there was a good deal of straggling and often excessively prolonged voyages. Long voyages, however, were so common that shipowners, freighters, and consignees resigned themselves generally to what was regarded as nearly inevitable. All the same, the greater the number of days that

a voyage lasted, the greater were the odds in favour of an enemy's cruiser snapping up a prize. For one reason and another the old convoy method was much disliked by some British merchants and shipowners, and many of their vessels sailed without it; and many more would have done so had not the authorities stopped them. The dislike of the various sections of the British shipping interest to the system was proved by the frequency with which during the so-called Great War complaints of it were made, and also by the frequency with which the British Government obtained statutory powers to enforce more stringent convoy regulations.

It might have been supposed that the Government would have readily availed itself of the feeling exhibited by the shipping interest and have acquiesced in the abandonment of the convoy system, thereby setting free for other services the men-of-war that had been employed in it. Exactly the opposite happened. To the very last the Government was in favour of convoys, and sought for an increase of its powers to compel their more general use. It is this that gives to the matter practical interest

at the present day. There were two totally distinct views of the convoy method—one held by the shipping interest, the other that of the Government. Though unaccustomed to anything like what in these days would be considered reasonable celerity of operation in maritime trade, the shipping interest of the day did undoubtedly feel the evil effects of excessive delays. It was believed that if merchant vessels sailed independently, and took their chance of avoiding or being captured by the enemy, the risk of loss would be more than balanced by the advantage of quicker conveyance out and home of cargoes that escaped hostile attempts. In many cases the mercantile community was ready to take the risk, and indeed begged to be allowed to take it; sometimes it took it in spite of the prohibition announced by the authorities.

The view of the latter must be stated, as in the event of another war it is likely to be heard of again. It involves strategic considerations which must not be left unnoticed. The Government believed in the efficacy of the convoy method. Its plain duty was to defend

the country's trade, so that the national resources might not be diminished. Moreover, nearly every merchant ship captured by the enemy, if carried into port, increased the latter's resources, a result which it was in the highest degree desirable to prevent. In addition to this the official belief was that the most economical distribution of the commerce-defending part of our naval force was that bound up with the convoy method. It was thought that, however numerous the men-of-war employed on convoy service might be, they would be fewer than the ships that it would be necessary to employ—in addition to those already assigned to it—in general cruising for the defence of ocean trade if merchant vessels were allowed to sail as they pleased. It is a commonplace of naval history that the British Admiralty was continuously beset with demands for more frigates than it had at its disposal. From this it will appear that the adoption or rejection of the convoy method of defending commerce will not depend solely on what may be called the mercantile view. The military view deserves at the outset at least equal attention; and if a war is being waged on a scale great

enough to put a severe strain on the country's naval resources, that view is likely to win in the end.

Present day conditions differ in many respects from those of the period just referred to. Now, celerity in operation is of the first importance in the shipping trade. To begin with, trade everywhere is now conducted with an eye to rapidity of turnover. To revert to slower methods would be to disorganise it, probably so thoroughly that it would take a very long time to regain the regularity essential to its prosperity. The habit of tolerating slowness has become quite extinct ; and it is to be expected that great difficulty would be experienced in trying to resume it, and great confusion would be introduced thereby. Though delays now would be absolutely much less than those of the earlier period, relatively they would be greater. An addition of three or four days to the ordinary duration of a cargo steamer's longer voyages might lose her consignees a market, and it would be of little practical importance to them whether the lateness of her arrival was due to the inevitable tardiness of a large group of vessels navigating in company

or to delays at the port of the convoy's first assembly. The cost of individual ships now is enormously greater than it was at the former epoch. The loss of earning power caused by idly waiting, though only for a few days, till the whole convoy was collected, would lead to a sensible diminution of the expected interest on the considerable capital sunk in a single vessel and her cargo. This might be made up to some extent by a rise in prices and freight ; but the rise is not likely to be a sufficient compensation, because neutral competition might tend to keep it down. In these days, so low is the ordinary rate of freight compared with that of former days, that a vessel's wages bill absorbs a large proportion of her earnings ; and idle time must in effect make this proportion greater. The modern system of financing maritime trade operations is based on rapidity of movement ; and if bills drawn against the goods transported had to be met not only before the cargoes had been sold but also before they had arrived, the rise in discounts might kill all the profits. In addition to this, it should be remembered that some trades now flourish under a system in which commodities reach the place of import

in moderate quantities and at approximately regular intervals. Consequently a fleet of vessels loaded with the same description of goods arriving at the same time might flood the market and disorganise the trade, and thus further tend to transfer it to such neutrals as could undertake it, and whose operations would be more free.

When a country is engaged in a life-and-death struggle—as would be the case of a maritime commercial State in a first-class naval war—the military view of commerce defence must be allowed to prevail if a successful issue of the war is to be made likely. Still, the above-mentioned conditions inseparable from the convoy method will have to be taken into account. It would be a pitiable strategy that destroyed trade in the effort to preserve it. The merits of the various branches of the alternative or cruising method must be carefully estimated. If we look at the project of seeking for every hostile cruiser in order to bring her to action and capture or sink her or drive her into port, we shall see that, if it is practicable, it will give complete protection to sea-borne commerce. Unfortunately all experience

shows that this is not practicable. War is not a one-sided affair. It is a game that two can play at; and it was a master of it who taught us that you can no more make war without suffering some loss than you can make omelettes without breaking eggs.

The plan of keeping so many cruisers where they are more likely to meet than to miss those of the enemy, so that the enemy's, on their part, will be more likely to have to fight than to make prizes, has been found, on practical and prolonged trial, very effective. It necessitates the maintenance of a very numerous body of cruisers, and also the adoption—as part of the strategy of peace—of carefully considered arrangements for getting them to their stations quickly when war is imminent. The same necessity attaches to the method of seeking out and engaging every hostile cruiser; for allowance must be made for the failure of some of your own ships to find what they are looking for. The method of prearranged routes to be followed by unescorted merchant vessels will afford little protection for sea-borne trade unless arrangements have been made for keeping depredators from infesting the routes. These

arrangements also will involve the necessity of having many cruisers.

A probable modification of the convoy method would be the despatch at short intervals of small groups of escorted merchant vessels. This would diminish some of the objections to the method. It could, however, only do so at a certain cost, which would be a large increase in the number of the convoying men-of-war. There would then arise the question if the number required could not defend the trade more effectually were the cruising method adopted. The point to be noted is that effectual defence of a great and widespread ocean commerce, whatever method be resorted to, inexorably demands a large number of defending cruisers. If, as was sometimes done with excellent results in former wars, we combine the convoy method with the cruising method, the demand for numbers remains as inexorable as ever. The need for large numbers will not be got rid of by providing a comparatively few cruisers of great individual power. Should the enemy merely have a cruiser force of the same character, he might be compelled to concentrate it; and concentration of intending assailants

of a widespread commerce would considerably diminish their power of doing mischief. An enemy is extremely unlikely to play deliberately into an opponent's hands; and it is to be expected that he will have provided himself with a cruising force that will permit depredations on commerce to be made even though his heavier cruisers have been compelled to concentrate. If a country having large maritime interests to defend has only a small number of cruisers, however powerful they may be individually, it must—at least for a considerable time after war begins—adhere to the defence method for which they were intended. If the enemy has many smaller cruisers and employs them in commerce-destroying, the relatively few powerful cruisers will be able to do but little to frustrate his depredatory efforts. It is true that they will have caused the enemy to concentrate his heavy cruisers; but it is equally true that to do so they also must be concentrated. It should be remembered that it is in the earliest part of a war that sea-borne commerce is specially exposed to danger; and if it should turn out that to defend it an increased number of cruisers must be provided, com-

merce would suffer seriously during the time necessary to complete the provision. The history of naval warfare shows that during hostilities the number of cruisers tends to increase. The fewer provided in the first instance the greater will be the effort necessary to make up a deficiency, and the more serious the probable injury to commerce until it has been made up.

If the commercial objections to any one method of defence are so great that they cannot be passed over, power of changing to another method should be retained. That power will not be retained if the means have not been provided beforehand. A State likely to become an enemy will be able to discover this, and will have laid its plans accordingly. The mere fact of being in possession of the power of making a change will not enforce the abandonment of the method adopted at first if, on trial when war comes, it is found to be effectual. The sound policy for a State with great maritime interests is to have a numerically strong cruising force which would permit and facilitate a choice of methods. The immediate problem to be solved when war is at hand is to distribute the

defending cruisers suitably. In doing this it will be necessary to take account of the whereabouts of the enemy's cruisers and the situation of the areas within which the trade to be defended principally accumulates. If the commerce-destroyers elude the search made for them, they will go where their scheme of depredation is likely to prove most profitable—that is to say, to the spots at which the merchant vessels to be assailed are most likely to be found. It is at the same spots, or in the areas which include them, that defending cruisers would be able to discharge their task most satisfactorily.

The battleship force of a country which has a vast sea-borne trade can help greatly in its defence. Every fleet navigating with its attendant cruisers carries with it an extensive area of sea within which its own cruisers have a free hand and the enemy's have not. The uncertainty of the enemy as to the extent and situation of the area will greatly increase its virtual size. When friendly merchant vessels come into it and as long as they remain in it they are safe. It in effect becomes a port of refuge endowed with the quality of mobility,

and its movements will sometimes be such that merchant vessels making for shelter from an enemy may be met. The danger zone which those vessels have to traverse would thereby be much narrowed. It has more than once occurred in naval warfare that large fleets have purposely cruised so as to cover, as it is called, the approach to home or the departure from it of a considerable body of merchantmen. Fleets have also cruised on purpose to intercept a body of the enemy's merchant vessels carrying much-needed supplies. These cruisings are likely to bring, and as a matter of fact have brought, the contending navies into contact in important general actions, a result that must always be allowed for.

Molestation of ocean-borne commerce in war is not confined to attacks on that of the belligerents. The commerce of neutrals, when a great naval war is in progress, is liable to inconvenient interference at the hands of the contending parties. The general drift of modern policy—in time of peace, be it thoroughly understood—is to relax the strictness with which a combatant would enforce against

neutral traders what are styled belligerent rights. Excellent rules for the conduct both of belligerents and neutrals are drawn up when peace exists and receive the approval of different Governments. How far rules of the kind will be respected when a war is in progress remains to be seen. The little evidence that is available in the case does not encourage a belief that the respect will be anything like perfect. The determination of a belligerent to do all the harm he can to his enemy, and the cupidity that would urge a neutral to whom a prospect of unusually great gain was open to ignore restraints on his trade, are forces to which the most admirably drawn rules ever consigned to paper could oppose but little effective resistance. We may take it that until it has been demonstrated beyond doubt that the nature of man can be altered by the formulation of rules or the signing of conventions, combatants heated by a struggle and neutrals greedy for gain will be kept within bounds only by the fear of severe punitive measures. A neutral strong enough to make interference with his trade undesirable and ready to use his strength will soon find that that trade will be allowed to

go on free from vexatious disturbance. On the other hand, a neutral too weak to defend his interests by force, and unable to get some more powerful neutral to do it for him, will find it best to keep out of the way of the belligerents.

The outlook is even less promising when it is proposed, as it sometimes is, to give to an enemy's private property at sea immunity from capture or destruction. It has been proved by the experience of a long series of wars that practical immunity of the kind desired can be given to private property at sea if adequate naval defence is provided for it and properly arranged. There is no sort of proof in existence that rules drawn up in peace time will give it. The belief that they will is contrary to all that is recorded of human action in war and to all that is known of the manner in which men reveal their real nature under the stress of severe trial and imminent danger of the most serious kind. In a great naval war one side at least will be fighting for its existence. To expect nations so engaged to regulate their action by rules drawn up in circumstances as different as can be conceived from those of the

struggle, would be as futile as hoping to stop a dog-fight by singing a hymn. In ordinary social conditions no one supposes that the laws against fraud would have any effect if there were no policemen or gaols. International agreements and rules for the conduct of belligerents will be respected when a power has been invented to enforce compliance with them by physical means. This cannot fail to result in hostilities on a more extended scale. So that in attempting to regulate war effectively we get back to the point from which we started, and find that the conditions, far from being ameliorated, are likely to be more deplorable than ever. All this cannot be ignored in a study of naval warfare and the strategy that should guide its operations. The strategist may have to reckon with the international jurist as well as with the enemy.

CHAPTER VII

JOINT EXPEDITIONS

JOINT, or—as they are sometimes called—conjunct, expeditions are carried out by bodies of land troops usually conveyed in transports, and an escorting or protecting naval force. The greatest expedition of the kind that can be undertaken is one which is meant to effect the invasion of the enemy's country. Expeditions on a smaller scale aim at the reduction of more or less isolated hostile positions, sometimes in order to seize or destroy the ships of the enemy which may have taken refuge there. Sometimes it is advisable to attack, even at considerable cost, and occupy a port which an enemy has been using as a base for his commerce-destroying cruisers. Sometimes a port may be seized because the seizer wants to make use of it himself. The scale of expeditions with these different objects varies

greatly, and depends on the amount of resistance expected and the number of troops considered necessary to overcome it. Every landing operation does not necessarily require a joint expedition. For instance, it may be within the power of a landing party taken from the crew of a single ship to overpower the defenders of a signal station. A landing party from a squadron may be strong enough to destroy some hostile torpedo-craft which has taken shelter in an unfortified harbour and is secured against attacks that can be delivered on the water. The general condition differentiating the ship or squadron landing-party from the joint expedition is the length of time that the force landed will have to remain on shore. In this is involved the efficiency of the resistance expected. The less formidable the power of the defence, the shorter will be the probable time spent in overcoming it. Unless the sufficiently prolonged inactivity of the whole of the enemy's navy can be counted on, a naval officer would be rash if he were to land a considerable portion of his crew for more than a few hours.

Operations admitting of hasty execution are

closely akin to small surprises which rarely have any commanding influence on the course of a war. If they are unsuccessful, it is still open to a larger force to operate against the enemy with deliberation. If, for example, surprise torpedo-attacks on ships fail, the ships unsuccessfully attacked may, when they put to sea, be engaged by ships of their own class. If a place is so important that an attempt to reduce it is thought indispensable, its impregnability as regards a mere hasty landing-party from ships will not prevent, but on the contrary will invite, the despatch against it of a joint expedition of respectable strength. What ought to settle the point as to sending or not sending the expedition will be the value of the place—what effect its loss would have on the belligerent fortunes of the enemy and what good its occupation would be to the senders—and the possibility of sparing, from the other operations of the war, the forces needed to constitute the expedition. Foolish indulgence in the gratification of what ignorant talkers declare to be national sentiment, and still more foolish subservience to the recommendations of politicians in authority eager to gain party

credit by making a seemingly brilliant stroke regardless of strategic results, may lead, as experience tells us, to the despatch of expeditions useless though successful and likely to breed general disaster if unsuccessful. Genuine national sentiment is a factor of the highest importance in war, and no serious strategist would venture to disregard it; but it is his business to distinguish between the real and the fictitious, and not to let the latter influence him in his choice of plans of operations. It would be absurd to write of warfare without calling attention to this. The direction of a real campaign will be pursued, not in the cool and unruffled moral atmosphere in which a war-game is played, but amidst the heated and tumultuous environment of national and individual passions, hopes, fears, and ambitions.

As has been said, the greatest of all expeditions of the kind is the one which aims at the invasion of the enemy's country. It is useless to think of it unless the military authorities are confident that they can find the force required—that is to say, the force presumably sufficient to overcome the resistance that the defenders of the invaded country could offer. This is

accepted as a truism. What is equally true, though it has not met with universal acceptance, is that it is useless to think of going across the sea to invade a country which has large land defence forces until the naval authorities are confident that they can prevent interruption of the invading expedition whilst on its way, or indeed until the troops belonging to it have been put on shore. This is to state in another form of words the strategic principle that command of the sea is an indispensable preliminary to over-sea invasion. It has just been remarked that this principle has not been universally accepted. The school that accepts it is composed of some soldiers and of all those who from adequate experience know what the sea and work upon it are. It is rejected by many, perhaps most, of the prominent soldiers in European continental countries, who continue to believe that invasion from over sea and on a great scale is practicable though the intending invader may not have secured command of the sea.

Allusion has been made already to the persistent vitality of this belief; and it will be well to examine the reasons why, in spite of

experience being against it, it still survives. As far as can be seen, those who hold it are far less numerous than those who reject it. A tenet—especially in strategy or tactics—is not necessarily wrong because it is that of a minority. Indeed, as might be shown by a multitude of examples, the few have been far more often right than the many. Decisions on strategical and tactical questions reached by the simple process of counting votes are nearly sure to be wrong. The danger of error due to the adoption of this process is greater than ever at the present time, when shallow thinkers have abundant opportunities of promulgating their notions with the help of subservient adherents. Insufficiently thought out and hastily adopted conclusions get a start which makes it extremely difficult for sound views to catch them up. The former are received without question by the large body of men to whom the mental labour of investigating a problem thoroughly is highly distasteful—the mental effort needed for proper investigation of strategical or tactical problems is certainly great—and, once received, no place is left for that which has been well thought out and is sound,

False prophets owe their influence to irresponsible chatter, oral and printed, of disciples more than to their own qualities. Consequently the doctrine of the indefeasible necessity of the command of the sea as a preliminary to the invasion of a country that can be reached only by water derives no value from the numerical preponderance of its professors. It must stand on its own merits.

In that numerical preponderance there is, however, remarkable significance. It includes all those who have practical experience of the sea and navigation, and no small number of soldiers besides. It is rejected by soldiers of European continental States, even by some of the most eminent of them, and by their followers elsewhere. Eminent as these authorities unquestionably are, they yet know little or nothing of the sea. That appreciation of the true conditions of operating on it which comes only from long experience of its moods is denied to them. The great Napoleon understood, and indeed did not hesitate to maintain, that the command of the sea would be essential to the success of an attempt to invade England. What he failed to perceive was the right

method of gaining that command. Great soldiers who have appeared since his time believe that over-sea invasion can be carried out though command of the sea has not been obtained. Their belief would be exactly paralleled by that of seamen who might be convinced that Germany could invade Spain by land without regarding the military force of France, or that France could invade Servia by land without regarding the military force of Austria. No doubt this conviction would appear to Continental soldiers thoroughly absurd.

Germany would not attempt to invade Spain until the French army had been decisively defeated or in some way neutralised. Nor would the invasion of Spain even then be attempted unless the line of communications between the army invading it and the base in Germany could be kept secure. Similarly, France would not attempt to invade Servia until she had first disposed of the Austrian army, and also until the security of the line of communications between the invading expedition and France had been made certain. Continental soldiers contemplating the invasion of an island State may be ready, as some say that

they are, to sacrifice their escorting fleet to the presumably stronger insular navy. It is extraordinary that they should imagine that this would render the voyage of the invading troops practicable. If in sacrificing itself the escorting or protecting fleet had managed to put out of action a portion of the insular naval forces equal to itself, the sea would be less, rather than more, clear for the invader. The survivors of the stronger navy would have the now entirely unprotected transports at their mercy. If the whole of the stronger navy had been put out of action by the weaker—a thing improbable enough—the command of the sea would have been obtained, which is the very condition held to be essential in the safe transport over water of an invading force.

Transfer the scene to dry land, and estimate the readiness of the German or French General Staff to sacrifice a great army in forcing a passage for another army bent on invading Spain in one case or Servia in the other. It is sure to be less than that with which the respective military authorities would sacrifice a fleet. It is not a subject for jesting; but the case irresistibly recalls the attitude of the

patriot who, according to the American humorist, was prepared for the good of his country to sacrifice the whole of his wife's relations. It may of course be said that if the invasion of Spain was necessary to Germany, or that of Servia to France, the operation would be attempted at any cost. This statement would need qualification. It should run—at any cost that would leave the invasion still practicable. If the French were to destroy a German army trying to make a way for another through their territory, or the Austrians were to destroy a French army similarly employed, the comrades of the destroyed forces would have a task on hand very different from the invasion of a relatively remote country. The ability of the French or Austrians to destroy an intrusive army would, in accordance with the probabilities of war, deprive the invaders' line of communications of proper security. This may be expected to prove an insuperable obstacle ; unless, indeed, invasion is to be the work of a virtually flying column that cuts itself off, or submits to be cut off, from its base. This is what happened in Egypt at the close of the eighteenth century, when the sacrifice of a protecting fleet did not

save the invading army from eventual extinction. The Russian adventure of 1812 also may be remembered.

The task usually before the Continental strategist who works out a scheme of invasion is that of passing an army into a contiguous State across a frontier often not wider than a mere geographical line. The difference between this and that of passing an army across the sea in the teeth of a strong navy's efforts to prevent it is enormous. The maxim that concerning things not apparent and things not existing the reasoning is the same has been utilised, if unconsciously. The difficulties of work on the sea are not apparent to those whose work is done exclusively on shore, and so those difficulties are treated as non-existent. The lesson to be learned from this by the country which it is hoped to invade is that the belief in the practicability of over-sea invasion, even without having command of the sea, is to be regarded as a living faith. It may be a mere superstition, but history teaches us that if there is one thing that human beings will fight for more desperately than another, it is the maintenance or promulgation of a false

belief. The people of the threatened country will not be justified in thinking that no one will attempt invasion, and consequently in neglecting all precautions against it. The one chance of success that the intending invaders could have would be given them by the relaxation of precautions on the part of their foes. The very soundness of the doctrine of the counter-invasion efficacy of the command of the sea makes it obligatory that the country to be defended should possess and keep that command, and should be so strong on the water as to render it most unlikely that the assailants will be able to take it away.

The motive impelling strategists to resort to over-sea invasion is the desire to do more harm to a maritime enemy than would generally be practicable by naval means only. Sea power, at any rate in the narrow sense of naval strength, has, as should always be remembered, its limits. It is not only possible, if its navy is insufficient, but also likely, that an insular State (like, for example, the United Kingdom), dependent upon the introduction of sea-borne commodities for prosperity and even existence, would be compelled to make peace as dictated

by an enemy though not a single hostile soldier ever landed on its shores. The one condition permitting this would be that the insular State should have lost or never have possessed naval predominance. The case of such a State is exceptional. Most maritime States are continental and are not likely to be conquered unless land forces are used against them. Consequently a land force of their own, able by itself to repel an invader, is indispensable to them. To prevent misunderstanding it may be repeated here that, though a less considerable land force of its own would suffice for the insular State, that State must still have a defensive and—if you like to call it so—home-service land force strong enough to compel an assailant, if he comes at all, to come with such numbers that evasion of the defending navy would be practically impossible. If those who direct the policy of the insular State are wise they will, over and above this, have a mobile land force equal to the task of seizing places of some importance belonging even to countries which have great armies. Having suitable naval predominance, it will be within the power of the islanders to direct their efforts to any

point on their enemy's coast which may commend itself to them as offering facilities for their intended operations. By doing so they will be respecting one of the leading principles of strategy, viz. compelling the enemy to busy himself about his own security. Make him busy enough about that, and his eagerness to invade your country across the sea may be expected to cool.

This brings out the importance of including plans for joint expeditions in a scheme of belligerent action. The mere act of looking at the problems raised will enforce the doctrine that in any great war in which an insular and maritime State may be involved, co-operation between the land and sea services must be frequent. The exact moment at which the co-operation is to occur cannot be predicted in advance. It will be necessary to be ready when it comes. We must therefore have our plans drawn in advance, and so drawn that they will admit of prompt modification if circumstances should make it desirable. War, as has been more than once observed, is a means, not an end in itself. The end is to bend the enemy to your will. If driving his flag from

the sea will not do that—and it may not—other means of conquering him must be resorted to. Bringing home to him the fact that his territory is not inviolable, and that he may lose some of it permanently if he persists in opposing you, will be a powerful stimulus to the inclination for peace which rarely ceases altogether to exist in the mind of a belligerent. Your naval operations, therefore, must have an ulterior object. This may sound heretical and mischievous, but it is not so in reality. Writers on naval warfare, amongst them some of the most distinguished, have warned us against the pursuit of ulterior objects to the neglect of those nearer to us. Their warnings have been wise in themselves and have been needed. It was not pursuing an ulterior object that was wrong ; it was abandoning, in order to obtain it, the chance or certainty of gaining an immediate decisive advantage. This led men sometimes to spare a hostile fleet because it was believed that stopping to defeat it would lead to the postponement of operations for which an expedition had been specially prepared or would prevent them altogether. The attractive brilliancy of the ulterior object was so dazzling

that those who were in pursuit of it were made blind to the only sure means of attaining it.

The history of war furnishes a multitude of examples of joint expeditions. These ought to be studied, not only as to the details of their composition and proceedings, but also as to their general effect on a war or a campaign. The study will reveal certain conditions which must be regarded as indispensable to the success of an assailant.

A thorough knowledge of the defences and of the topography and resources of the place must be obtained. The strength of the assailing force should greatly exceed that of the defenders. Unless the former was between three and four times the latter, the expedition often failed.

Whatever the strength of the assailants is to be, it must be great enough for its work altogether independent of any help that it expects to receive from inhabitants of the place attacked. A fruitful cause of failure has been an erroneous belief that an insufficiently strong expedition will be abundantly reinforced by the inhabitants.

The length of time that the occupation of

a successfully attacked place is likely to last must be carefully estimated, and arrangements to ensure the arrival of the supplies and reliefs successively required must be devised.

The disposal or employment of an expedition, if not successful, must be settled before it starts. The usual way of employing an expedition that had failed in the object for which it had been specially despatched has been to use it for an attempt elsewhere, but not very far off. On the face of it this plan has little to recommend it. It is quite true that in war you should not be rigorously tied down to only one method of proceeding. To have an alternative in reserve is generally wise. That alternative, however, should always aim at a result nearly or quite equivalent to the first. It is very unlikely that there would be two hostile positions near each other of almost equal importance, one of which could resist the efforts of an unbeaten expedition, whilst the other would be likely to fall if attacked by an already defeated and disheartened force. The possibility of a repulse must be taken into account ; and it will have to be settled whether it would be better to employ the repulsed expedition in a different

sphere of operations altogether or in an attempt to make up for its failure by obtaining some minor and perhaps unprofitable success in the neighbourhood. War being waged by men, what men are pretty sure to do must be kept in view. The Government will wish to show something for its work: the inclination of the lawyer turned politician to pose as a strategist is ineradicable. The naval and military commanders will be eager to make people at home think that they have not been altogether unsuccessful. Therefore, when the oyster has been lost, three important interests will be concerned in explaining that a shell has been secured, and that it is a very fine shell indeed. This is the mode in which forces that might have been utilised to advantage in other operations have sometimes been frittered away. It helps us to see why the successes of some campaigns are to be looked for in the utterances of speechifying commanders rather than in the results of the operations.

The formation of a joint expedition offers a fine opportunity to the pedant and the faddist to air their opinions as to the principle of command. In the minds of these persons the

combined forces constituting the expedition should be under a single commander. There is something attractive in this opinion and something specious in the arguments with which it is supported. Unity of command is undoubtedly a great thing; but, like other things, it has its limitations. If the unity strays into regions of the conditions of which the sole commander is necessarily ignorant, neither unity nor command is preserved; because the ignorant chief can give no order based on his own knowledge, but will inevitably fall under the influence of the experts to whom he must appeal and who will not be responsible for results. This will breed that most undesirable state of things in which there is a combination of real power with irresponsibility. The spectacle of a general officer, without expert advice indistinguishable from expert control, directing the mooring of a fleet of transports, or of a flag-officer similarly situated directing the encampment of an army, would be pitiful to the force under his command and encouraging to the enemy. What is wanted is unity of aim and of effort, which, to be real and effective, must spring from something very different from mere deference to

necessarily inexpert command. The authority of the Government of the country will supply all that is necessary to unity of command by itself ; and a spirit of hearty co-operation will be far more productive of success than subservience of one branch of the force to the other. Here and there the province of one will overlap that of the other. In embarkation and disembarkation of troops it is impossible to lay down, as a general rule, where naval or military authority exactly begins and ends. The practical exercise of either will find a limit depending on the particular circumstances of each case. It is obvious that these are not the same when troops walk on board a transport as when they are conveyed to one in boats across, perhaps, a broad stretch of water. Differences of opinion between the two services are more likely to occur in operations of this class than in those of greater moment. The differences, then, will be between subordinates and not between the chiefs. In the historical instances in which expeditions have failed because of alleged disputes between the land-officers and the sea-officers, it is probable that the differences of opinion began between inexperienced and conceited juniors, whose

sensitive self-importance prevented them from taking a large view of the circumstances. The failure of the expedition would be due not to want of cordiality between the leaders, but to the fact that one or both of them had been unable to preserve proper discipline amongst subordinates. Inability to preserve discipline is a sure sign of incapacity in an officer, and to give such a one command on an element as to which he would be without professional experience would be to invite, if not to ensure, disaster.

CHAPTER VIII

SCOUTING

THE real meaning of scouting is collection of information concerning an enemy's force and movements by observers so far from the main body of their friends that they are beyond signal distance from it, i.e. are not in direct and immediate communication with it. The operation in its essential form must have been familiar to the earliest belligerents. The word indicating it was in use in the English Navy in the seventeenth century, if not before. The work had little or no connection with that of spies. Scouting was carried on openly, or at any rate only with such disguise as has never been considered unlawful in war. Reconnoitring, properly a land service term, came into occasional use in the later naval contests with France; and, most likely because of its origin, it was applied to the operation of approaching

a hostile port and ascertaining the number and condition of the men-of-war in it. Scouting would include more than this ; and, in some form or other, is likely to be continued in the future. Being what it is, it will be obvious that the method of conducting it must depend upon the means of communicating information available at the time. Until the introduction of the electric arc-light into ships, and its combination with the system of signalling by flashes, the furthest point to which visual signalling could be carried was fixed by the distance at which alterations in the amount of sail set in a ship could be distinguished, of course in daylight. In some not unusual states of the atmosphere, flashing signals made at night with the electric arc-light can be seen at a very much greater distance. The range of practicable communication has been still further and very greatly extended by the use of wireless telegraphy. This, though it may have uncertainties of its own, does away with the uncertainties, due to different atmospheric and other conditions, adhering to human power of vision even when assisted by telescopes. The improvements in the means of communication have not altered

the principle of scouting ; they only enable it to embrace a much larger area of operations.

In carrying out scouting it is necessary to proceed to the neighbourhood of the enemy's force to be reported on ; to observe that force closely, endeavouring both to ascertain its strength and divine its intentions ; and having done this, to return to a point at which it is possible to communicate with the officer or body awaiting information. The first thing to be noted is that success in the work depends upon human qualities—the power of distinguishing what ought to be observed, discrimination between the important and the trivial, judgment in anticipating the enemy's next move, and lucidity in conveying information obtained. Other qualities also will be necessary, viz. coolness and intrepidity. It need not be lengthily demonstrated that these qualities in no way depend on mechanical appliances, however ingenious. The finest telescope that can be manufactured will not make a dull man perspicacious, or a fidgety man cool and deliberate, or a timid man bold ; nor will the wireless telegraph, however efficient. Ingenious optical and transmitting instruments extend the

range of and consequently augment certain of the physical powers. The actual process of scouting has, therefore, been modified so far that observation of an enemy's force can be carried out at a greater distance than formerly was practicable from the observer's main fleet, and the information gathered concerning the enemy can be reported much more quickly. From the latter it follows directly that scouting can take place very much further from the flag of the commander-in-chief than seemed possible not many years ago, and that officer can often receive information in a much shorter time.

This being so, there are still questions to be answered. What dependence can be placed on the efficiency of the instruments? Will it be constant? We may assume that it will be ; but we must also assume that instruments of identical character and of equal efficiency will be in the hands of the combatants on both sides. Here, therefore, as in every other branch of naval warfare, the struggle resolves itself into a contest of human wits. Scouting—now as much as ever, though not necessarily more than ever—must be a matter of careful and definite pre-arrangement. There must be

no reliance on the hope that perfection of telescopes or of radio-telegraphic appliances will turn an insufficiently thought out or ill drawn up plan of scouting into a good one. In devising the plan you must have before you a clear and precise conception of the information that you wish to obtain and also of the length of time that the collection and transmission to yourself of the information will take. Perfect information coming too late for you to act upon it, and punctually received information of doubtful character, will be equally useless. What you want to know will be the position, strength, and condition of the enemy's force. Is it concentrated or dispersed? And, if dispersed, where, of what size, and how composed are its several divisions? If the whole hostile force is not being kept together, it will be impossible to ascertain all this simultaneously unless more than one scouting vessel is employed. If sighted at sea the enemy's ships, like your own, will almost of a certainty be in motion. The real direction of their movements will have to be discovered, as it may indicate that which it is of the highest importance to you to know, viz. your enemy's intentions.

Consequently scouting is likely to be often a large and comprehensive piece of work requiring the simultaneous and connected employment of several different vessels. If these are individually powerful, the total deduction, due to their absence, from the strength of your fleet must be important ; so important indeed that the well-established reluctance of every commander to reduce his force when contact with the enemy is probable will exert its natural influence, and the scouts will be employed in insufficient numbers. This leads to the conclusion that the fighting power of a scout should not be so great that the absence of several craft of the class will materially diminish the strength of the fleet to which they belong. Additional justification can be adduced for this conclusion on other grounds. The object of a scout is to obtain and report correct information. Fighting would in general be outside her province. Even if successful she might have to spend so much time in engaging an antagonist that the results of her scouting work would be wasted. High speed and great fuel-endurance are more desirable characteristics than ability to fight an enemy. If her

armament is heavy enough to render her superior to insignificant antagonists that may try to drive her from her position of observation, that is all that would be required. It is easy to find steamers, not built for war, which can move at a rapid rate, can carry a large stock of fuel, and can be equipped with an armament sufficiently heavy. The real power of a scouting vessel should be found in her ability to get away from any hostile ship of force that may fall in with her.

This raises the question of the advisability of building ships specially for scouting service. If we can avoid doing so, we shall lighten the burden of naval expenditure in time of peace. A comprehensive survey of the whole subject of scouting in a great war will almost of a certainty convince us that the number of vessels to be employed in the work must be considerable, and would be largely governed by the geographical position of the hostile country. Are we then to build and maintain during peace time all that we are pretty sure to want? If we do, the procedure will hardly fail to increase our peace naval-expenditure. Is there no way of either saving money or employing it

to better purpose? If we do not provide in anticipation of hostilities the whole of the specially built scouts that will be necessary, we shall have to make up the deficiency by using suitable merchant steamers. As yet scarcely any nation has built, or indeed seems disposed to build, anything like the number of scouts that would have to be employed in a great war. Therefore, notwithstanding such expenditure as has been incurred in the direction of providing specially built scouts, it will be compulsory to have recourse to the merchant service after all. No good reasons have been given for not doing altogether with suitable hired or purchased merchant vessels what would have to be carried out with them in part.

The land-service operation of reconnaissance in force has its counterpart on the sea. It will not take place except when the hostile main bodies are fairly near each other. Scouting then will not be a remote piece of work, but one executed so near at hand that a sufficient detachment to cover it can be employed, and employed in such a way that it will be able to rejoin the main fleet before a collision with the hostile fleet becomes imminent. The force

enabling a reconnaissance to be completed in spite of the enemy's attempts to prevent it will lie not in the armament of the scouting vessels, but in that of the supporting fighting ships.

If we are to trust to the mercantile marine to furnish us with the number of scouting vessels that will suffice to meet the demands of war, we must have an organised system of preparing and using them. An essential step towards the completion of this system would be the employment of vessels of the kind under consideration in the grand peace manœuvres. Officers would become habituated to their use, and actual experience would suggest methods of turning their qualities in the most suitable direction.

By itself, the introduction of radio-telegraphy has greatly extended the area of the scouting field. It has—again by itself—enormously increased the distance at which reports can be received from an observing vessel. It permits between an observer and his chief, scores and perhaps hundreds of miles apart, the exchange of question and answer which in effect enlarges the fulness of reports and furnishes means of testing their authenticity. When only the older

communication appliances were available the observer, in order to render his report, had to reach a point distant about an hour's steaming from his chief. He need now only reach one day's steaming distance from him. The range of direct communication has already been increased to twenty times its former amount, if not still more. Notwithstanding all this, there is reason for doubting if scouts will be employed at much greater distances from their main body than they would have been had radio-telegraphy never been introduced into navies.

There must be a range beyond which the transmission of information, however interesting, would have little practical value as regards the current operations of war. It would be of no great use to give the commander of a fleet information about his enemy if he could not get up in time to take advantage of it. The time required to reach the decisive point will largely, perhaps entirely, depend in such a case on the area of water to be traversed—that is to say, on the distance at which the fleet, when it starts, is from the point. By the conditions of the case the information, being transmitted

radio-telegraphically, is immediately received, and the receivers may be assumed to be in a state of readiness to move that is equally immediate. The number of miles that an admiral resolutely intending to find his enemy and engage him will endeavour to maintain between himself and the latter will be governed to only a small extent by the transmitting efficiency of the telegraphic appliances with which he is supplied. He cannot, as a rule, reduce the number below a particular figure, which the circumstances of the campaign will indicate, without facilitating hostile torpedo-attacks, which he ought to do his best to ward off. He must not, on the other hand, increase the number of miles beyond that which he can cover in time to come into contact with his enemy early enough to suit his own purpose. In fact, his proximity to and his remoteness from his enemy's force will generally be dictated by conditions independent of the means of transmitting intelligence. No improvement, not even the attainment of perfection, in these means will give a commander any guarantee of impunity if he carries his force into the zone within which the enemy's torpedo-craft, both

above water and submarine, can act most effectively. Improvement in the means will, however, permit him to increase the distance between his fleet and that which he wishes to engage, up to a moderate amount. To this amount he cannot add without diminishing his chance of meeting his enemy. Experience alone will show exactly how much further possession of the means of practically immediate communication of intelligence will permit a fleet really eager to fight to keep from its antagonist. In the meantime we shall be safe in assuming that it will not be anything like the number of miles that the use of the radio-telegraph would seem to suggest.

These considerations are of importance because of the modern tendency to believe that novel material appliances, or improvements in those that have been long in use, will cause an early revolution in warfare. These novel or improved appliances sometimes prove highly effective in special circumstances. A conspicuous example is the torpedo, which is a formidable weapon in circumstances not unlikely to be experienced in war, though it is far from likely that they will be common. The

efficiency of the radio-telegraph will be found to be subject to similar limitations. In certain conditions we may expect it to prove highly efficient. In the case in which a fleet is advancing towards the station taken up by its opponent, it will be possible for the latter's scouts to supply continuous information as to the proceedings of the approaching force. If the scouts are two hundred miles from their own fleet, and can observe their enemy when he is ten miles from them, they will begin to communicate when the hostile fleets are two hundred and ten miles apart. If they had no radio-telegraph they would have to steam back some hundred and ninety miles before they could make certain of being in communication with their friends. At a speed of twenty knots this would take them nine hours and a half.

It must not, however, be concluded that the possession of radio-telegraphic apparatus would necessarily give a priority of nine and a half hours in the receipt of information. Even if the radio-telegraph is not in use, there might be, and probably would be, linking ships between the main body and its scouts, and through them information might be transmitted

far more rapidly than the fastest steaming scout could convey it. Also there would probably be shore signal-stations which could take in messages and forward them where they would be needed by the ordinary telegraph, an arrangement which would shorten considerably the time of sending intelligence. It will not be safe to count upon obtaining from the use of the radio-telegraph in these or similar circumstances a greater acceleration in the receipt of intelligence than that of a few hours. A period of even a few hours may be of great importance in war ; but it is desirable that the general arrangements should be such as to exclude the possibility of so short a period involving any decisive effect upon the course of hostilities. As our enemy will have the same, or as good, material appliances as we have ourselves, we must expect that he will use his to neutralise the advantages which we hope to receive from our own. Superior ingenuity and more accurate estimation of the conditions of naval warfare will in this, as in other branches of the art, be of more value than the mere possession of appliances which are equally at the service of both sides.

In its essentials scouting will remain what it has always been, though modern invention may have extended its range. Coolness, precision in observing, and lucidity in reporting will be just as necessary now as ever. It will be of more value to an admiral to know exactly how much dependence to place upon the commander of a scouting detachment as regards the above-mentioned qualities, than to know that communication with him can be maintained with the most scientifically admirable apparatus. Few of the operations of naval warfare can be so easily imitated in peace time as scouting. Frequent exercises in it would help to familiarise officers with its methods and permit a useful knowledge of the qualities of those engaged in them to be obtained.

CHAPTER IX

STRATEGIC OPERATIONS

STRATEGIC movements may, and often ought to, begin before the actual outbreak of hostilities. Mobilisation, already discussed, is essentially a strategic movement. It must necessarily be accompanied with a more or less comprehensive assembling of ships. As soon as war seems certain, or indeed very likely, a country—unless its Government is very foolish—will mobilise its naval force. It ought also to see that its ships take up the most suitable stations. These proceedings are not belligerent ; they are not necessarily provocative. They are equivalent to the precaution taken by a sensible man who, when a quarrel is imminent, makes sure that there is nothing to prevent him from drawing his sword. Proceedings of the kind may, it is true, precipitate hostilities ; it is equally true that they may ward them off

altogether. The boldest man would rather attack an unprepared than a prepared enemy. If anything can make an intending assailant pause, it is the conviction that you are quite ready to meet his attack.

Mental as well as material readiness will be indispensable. The alertness needed for making effective use of the material elements of naval power will be best supported or ensured by the formation of a comprehensive conception of the whole field of hostilities, which in naval warfare is likely to be extensive. It will be necessary to draw a mental picture that will take in the whole area, will omit no important feature, and will yet be unencumbered with elaboration of detail. The picture must convey a correct impression of all the main conditions, minutiae being left to be dealt with by subordinates directed to conduct particular operations. It is a commonplace or a truism, but one worth remembering, that the strategist at headquarters should neither tolerate vagueness in the delineation of predominant features nor allow himself to be immersed in a flood of minor details.

The centre of strategic authority will lie in

the seat of government. It is there that the general plan must be formed. It is from thence that general directions for the employment of the naval force must proceed, otherwise co-ordination of effort cannot be expected. Independent commanders must be allowed a free hand, but within certain limits; and what one is about to do should as far as possible be made known to all the others. It cannot be an easy thing to draw up a good strategic plan, because experience of war has proved that one side nearly always, and sometimes both sides, could only manage to form a bad one. The naval strategy of the War of American Independence adopted by either side was radically unsound, the British being the more unsound of the two. This is to be noted, because previous long-sustained and brilliant belligerent efficiency—like, for example, that of the British Navy in the Seven Years' War—carries with it no guarantee that good strategic plans will be adopted in subsequent contests. The inheritors of the glory won for their country by Nelson and the men of his epoch will have only themselves to rely upon in future wars. The fate that just a hundred years ago befell

the immediate inheritors of the glorious results bequeathed by Frederick the Great, conveys a lesson of eternal utility. We must study the history of warfare, and in studying it must pay as much attention to the errors and failures as to the successes recorded.

In addition to the intrinsic difficulty of forming a plan which will tend to frustrate all your antagonist's principal intentions—for this should be the object of a strategic scheme—there is the other and not less serious difficulty of maintaining singleness of aim. The strategist at the seat of government will be beset by a multitude of conflicting demands, some of them stupid and many of them selfish. No stupidity and no selfishness, however great and apparent, will prevent demands from receiving active support from at least some section of the newspaper press of the country. The politician, to whom the statements of his party's journalists are as the oracles of God, will do his best to prevent demands so supported from being ignored. Intelligence brought in from time to time will sometimes seem to—will sometimes really—necessitate a considerable change of plan. There will often arise the

harassing questions — Shall I confront the enemy at this point or at that? Ought I not to divert a portion of our fleet from the purpose now in hand to protect some particular locality? If anyone should think these questions improbable let him study the history of the War of American Independence. Let him even study some of the by-ways of the history of our Great War before and after the Peace of Amiens. One object will have to be kept in view consistently, and that is bringing the enemy's ships to action. The result will then be in the hands of the tactician.

In considering how this is to be brought about we shall have not only to know where the enemy's station is, but also what point he is going to reach before we can come up with him. Here we shall have to depend largely upon the help that scouting can give us, for we have now entered the province of the commander of a fleet acting with proper freedom, but under the general direction of the authorities at the seat of government. Strategic operations have often the character of a race between two competitors. If one force is chasing the other, the fact of the race

becomes obvious. It would be too much to say that there is no such thing as a tactical position on the water, because a fleet or a single ship may be so placed that attack can be delivered only from a limited number of directions. Nevertheless, strategic positions are more common in naval warfare than tactical. Hawke's position off Brest, like St. Vincent's later and Nelson's off Toulon, was strategical. The position taken up by the great combined Franco-Spanish fleet when Howe carried out his brilliant operation of throwing supplies into Gibraltar, was both strategical and tactical. These cases are merely illustrative, it being possible to adduce a multitude of instances on record in the histories of both ancient and modern times.

Aimless wandering about the sea is not likely to be the occupation of even the most inept of opponents. If the enemy's fleet goes anywhere, it must be assumed to have gone for what he, at any rate, considered a sufficient reason. Suppose that we see that he is making a mistake ; that the reason of his movement, however sufficient in his eyes, is really a bad one : are we to leave him to his folly and take

advantage of his absence from an important point to do something that we have been wishing to do there? The answer to this will most likely be—No; we have to catch him wherever he can be found and fight him. If we beat him we shall be able to accomplish our particular wish and other important things as well. If we ourselves are beaten it will show us that accomplishing the wish alluded to would not have helped us in a war in which it had now been proved that our enemy was stronger than we were.

Efforts to catch an enemy at a particular spot involve the assumption that, if he could, he would get away before we arrived. Here we have presented the essential conditions of a race, the competitors racing against time as much as against each other. It is evident that to establish the competition one side must wish and the other not wish to fight. In the case as assumed our first object in trying to reach the spot is to engage the enemy. Disinclination from battle must, therefore, be his and not ours. Is it conceivable that if he thought he could beat us he would not willingly await our arrival? His flight—for going away

could be nothing else—would be a practical admission of inferiority, and would leave us in command of the area to dominate which we had shown our readiness to incur the supreme risk of battle. How will the matter be affected by a superiority of speed on one side or the other? It will be seen at once that possessing higher speed will be of assistance to any force which adopts the method of running away. The immediate advantages of successful flight are plain, much plainer than the ultimate results. It is quite true that a fugitive may be able to fight on another day ; but it is not true that he will certainly avail himself of his ability. Success in the performance of an operation, in war as in peaceful pursuits, greatly encourages the repetition of it. Let a commander convince himself by actual experience that his strong point is the possession of a good pair of heels ; being human, he will be always itching to display it. It will be a good way of keeping a whole skin, but not of conducting a war. If, on the other hand, a commander has confidence in the fighting efficiency of his force, the speed at which it can move will not take the first place in his estimation.

Let us consider how speed superiority will help the other side. The latter has to come upon its enemy before he can run away, or has to catch him in his flight. Whatever superiority of speed the side may have, even if it be double or triple that of the intending fugitive, it will be of no assistance unless that fugitive fails to receive sufficiently early intelligence of his opponent's movements. If his scouts or lookout vessels are so badly placed or perform their duties so inefficiently, and his other means of obtaining information are so poor that he can be taken unawares, it is clear that his defective intelligence will be the deciding factor. If he can only start running away just before his opponent gets within range of him, the latter's superiority of speed should permit the fighting of an action, in which it will be superiority of power and not of speed that will be most important. It could not have been his antagonist's speed superiority that made the fugitive flee; because flight in the circumstances would be the very thing that would give him the least chance of escape. The flight would be due to a consciousness of inferior fighting power and to a hope on his part that, though he was not

strong enough to try the fortune of battle, he might save at least some of his force by running away.

What may be looked upon as the racing element is also to be met with in other strategic operations, though at first sight it may not be so apparent in them. If you receive intelligence that the enemy is attempting to do a particular piece of work which you desire to prevent—say, covering the landing of troops, conveying them across the water, making an attack on a particular locality, sweeping down on a scantily defended collection of merchant vessels, etc.—you will do your best to arrive at the proper point in time to prevent the hostile work being undertaken or at least completed. It may possibly be a case in which you and your enemy both consciously try to reach the strategic point first. If you are to go there at all, it will be because of a belief in your power when you get there to frustrate your enemy's intentions by force. You will have satisfied yourself, taking all things into consideration—for example, that he may be hampered, and so practically weakened, by the presence of transports—that you are the stronger.

It is likely that the enemy may try to reach the point, wherever it may be, sufficiently in advance of your arrival there to permit him to finish his job and be off, or fight you when he himself is unhampered by the simultaneous prosecution of another undertaking. Ability to do so will depend upon several conditions, of which relative speed will be only one. The respective distances which you and he will have to travel may differ so greatly that no conceivable difference in speed will be of consequence. You yourself may be engaged in an operation directly belligerent or other, but in your opinion necessary, which you cannot complete or abandon soon enough to give you any chance of getting to your destination in time, no matter what your speed may be. The enemy will omit no effort to conceal his movements and throw you off the scent. He may be expected to choose, for work of the kind above alluded to, the particular moment at which you would be furthest removed from the scene of his intended operations or so much occupied that an early movement on your part to interrupt him would be impracticable. It is a rare thing in war to receive information

concerning an enemy's movement which is both early and accurate. A few hours' delay in the receipt of intelligence on which you can depend sufficiently to justify you in moving would neutralise a speed superiority far greater than any that is in practice attainable.

We may safely conclude that speed superiority is not of commanding importance in strategy. Attributing to it the utmost value which may be legitimately claimed for it, superior speed is after all only one in a variety of belligerent factors, some of which will surpass it in importance, except in special and restricted circumstances. It is held by some that, even if it is not of predominating importance, it will nevertheless be as well to possess it. This would be true enough if it were not for the fact that no element of belligerent efficiency in a ship can be increased except at the expense of some other element. The speed that would enable you to arrive promptly on the scene of battle would be of little advantage to you if your fighting strength was largely inferior to that of your enemy. Nothing since steam propulsion was adopted by navies is more certain than that to preserve a general supe-

riority of speed is impossible. Your rivals will soon equal or out-do you. Also, it is not possible to retain it long enough to have even a temporary advantage over competitors, because your older ships will not be furnished with it; and it will be the slower, and not the faster, which will regulate the pace in the operations of fleets in war. Efforts to attain and preserve equality of speed would be much more likely to succeed. Attempting no more than that would have in its favour the strong argument that more attention could be devoted to improving the other ingredients of efficiency. Indeed there would be reason to expect that the question of speed would settle itself, and that shipbuilding policy would cease to be a mere contest of extravagant pecuniary expenditure.

It is urgently necessary to give careful consideration to the extent to which we should attach value to speed of ships as regards both strategy and tactics. Owing to the deplorable influence which the modern habit of trusting to imposing material wins over the minds of those who neglect the study of naval history, there is danger of its being credited with a predominant

importance to which it has no well-grounded right. This is seen in the frequency with which it is assumed that superior speed will permit the correction of errors in strategy or in tactics. This assumption is so often met with, that it is plain that those who make it do so almost unconsciously. Whilst they would hesitate to say in plain English that speed superiority is the refuge of the bad strategist and the bad tactician, they show by the mode in which they argue that this is really their belief. The belief—to repeat a simile already used—is like an occult and insidious disease, of the existence and progress of which the patient is unaware until he attempts to carry out some important task, when the ruinous extent to which the malady has weakened him becomes apparent in disaster. Efficiency in strategy and tactics belongs to the moral or intellectual world ; the speed of ships to the material. To confound the one with the other is to render hopeless efforts to attain efficiency in the conduct of naval warfare.

The variety of operations which a great war on the sea may be expected to occasion will be considerable. Though a definition of them

may be narrowed to a statement that sea communications have to be kept open, it must be remembered that this would include great diversity of procedure. Our main objective must be the enemy's force. Dealing with that is, after all, only means to an end. That end is a successful termination of the war, in reaching which not a few interests will demand defence. The true mode of defending them is beating the enemy ; that, of course, is understood.

As the business will divide itself into sections more or less numerous, by no means all of which can be taken in hand at once, the question of priority will call for a prompt and resolute answer. The priority to be settled will be that of importance as well as of time. It will soon be discovered how different the conditions will be, when hostilities have actually begun, from those that existed during the playing of a war game in a study or a lecture-room. In the latter the utmost penalty to be feared for a false move is a little self-dissatisfaction or a little polite ridicule ; in war it would be the loss of valuable property or still more valuable lives, if not the ruin of the false-move maker's country. This fact should be comprehended

by every student of naval warfare and never lost sight of. No possible astuteness will enable anyone to settle in advance what particular detail, when war has come, he will attend to first. The choice of particulars must depend upon circumstances over which the enemy may have as much control as you have yourself. The general plan can and ought to be framed beforehand ; but it must admit of suitable flexibility as regards its component parts. This statement cannot be repeated more often than is useful. Our chance of success will be small if we do not meet the advent of hostilities in the right attitude of mind. This necessitates the possession of imaginative power. Imagination kept under proper control will prove to be a gift of the utmost value in war as in any other art. Though we cannot endow ourselves with it, we can learn how to control it ; and the lesson is not the least important to the student of strategy.

CHAPTER X

TACTICS

THE preparations of peace time, information as to the enemy's state and proceedings when friendly relations have ceased, and the strategic dispositions undertaken at the commencement of hostilities are, as it were, antechambers through which runs the way to the tactical arena. All efforts have, or ought to have, tended to bring the opposing forces into fighting contact with each other. If our preparations have been adequate, our information correct, and our strategy sound, we shall meet the enemy on the scene of conflict with the advantage on our side. It is occasionally asserted that experience of former wars, as recorded in naval history, may prove of value in matters of strategy, but that—so great has been the change in material—it will not be of much value in tactics. There is just enough truth

in this specious assertion to make it very dangerous. The leading tactical principles remain unaffected by change in material appliances. It is the methods of putting those principles into practice that have been modified by the transformation of the material element of naval efficiency.

As the strategist endeavours to assure that you shall arrive on the field of battle superior in essentials, and most often numerically, to your enemy, so the tactician endeavours, when the fight comes on, to be superior to his antagonist at the crucial point. The principle that this embodies is eternal. It applied with equal certainty to the fleets of the ancients, to those of the Middle Ages, to those of George III.'s time, and to those of the early part of the twentieth century; and it will continue to apply as long as naval warfare continues to be waged. The tendency to virtual identity of material and to similarity of preparation observable in the case of all probable belligerents has generally had the result of making tactical superiority and superiority in numbers convertible terms. It is to be noted with care that the superiority in numbers need

not be found in the whole force of one side, but must be found at the crucial point. It is certainly good strategy to arrive on the field numerically stronger than your enemy. Naval history, however, teaches us that over and over again the tactician who had this initial advantage did not know how to make use of it, but allowed himself to be beaten by an opponent numerically his inferior. Also we are taught by history that skilful tacticians have been able to win victories by converting general inferiority in numbers into local superiority ; that is, at the crucial point in a battle.

Therefore the problem before the commander of a force about to engage is to discover the crucial point—the point in the hostile force which is the weakest and likely to remain weak for a sufficient time—and then to bring a superior and, if possible, overwhelming force against it. The hostile commander must be credited with a desire to do the same thing. The weakest point is not necessarily that near which the least powerful ships are stationed. The formation may be such that ships of great individual power cannot fully exert it. A point is weak if the force near it cannot be reinforced

in time to escape being overwhelmed by a stronger force of assailants. The tactical principle of Nelson at the Nile and at Trafalgar was essentially the same, though the method of carrying it into effect differed in the two battles. In each his aim was to bring a superior force to assail a part of the enemy's which could not be reinforced before the attack had succeeded. This would result in leaving the remainder of the enemy's fleet in a minority so serious that attempts to regain the day would be hopeless. As far as can be ascertained from history, every decisive victory at sea that has ever been won has been due to observance of the above principle. The rule appears to hold good, irrespective of modes of ship-propulsion, of armament, and of protection. Historians' accounts of sea-fights are often brief and vague, but it is generally possible to learn from them that victory was won by adherence to the principle mentioned. Conversion of general inferiority into local superiority had the same result at Salamis and Sluys as it was to have at Trafalgar and in the latest sea-fight.

It is not to be supposed that we can make sure of success by merely adopting a formula.

That would be satisfactory only to the narrow specialist or the pedant. To win, we have to be in the right strength at the right place ; and this though our enemy is doing his best to prevent it. This compels first the assumption of the right formation ; next, the execution of the right tactical manœuvres. It is just here that the tactician will be able to show what skill he possesses. There have been so few really great tacticians that it is justifiable to believe that, like good sailors and poets, they are born, not made. Nevertheless, as in the country of the blind the one-eyed man is king, so in the domain of tactics the average tactician who has studied naval warfare, and had plenty of practice in tactical exercises at sea, will be pretty sure to surpass rivals his equals in natural endowment, but his inferiors in knowledge of war and in familiarity with the performance of tactical movements.

Tactics are in part but the preliminaries of battle. Manœuvring for local superiority will begin outside the range of guns, the object being to permit—when at fighting distance—concentration of effect on the portion of the enemy's force attacked. This is the true

concentration. It is quite different from, and is opposed to, concentration of the instruments of war. These latter ought to be dispersed, of course within proper limits. The main instrument is the gun, and it is its fire that has to be concentrated. If the ships thus utilising the fire of the guns that they carry are distributed at suitable intervals, it will follow as a matter of course that the enemy's return fire against them must either be divergent or be only imperfectly concentrated. Consequently the hostile fire will in its effect be weaker than your own, as it will leave untouched some of your immediately engaged ships. It is most important that the different meanings attached to the term 'concentration' should be clearly perceived. You concentrate a number of your own ships against a smaller number of the enemy's in order to concentrate on a part of his force a heavier fire than that part can direct against you in return. This is the way to get out of the fleet's armament the best that it is capable of doing. It indicates what may be regarded as the law of artillery fire, viz. dispersion of the guns and concentration of their effect, which latter is all that tells.

Large results depend upon the extent to which this law is obeyed. The history of sea-fights contains many examples of actions remaining indecisive because it had been ignored. The plan of pitting individual ships in one line against individuals in an opposing line was in direct violation of the law. Rodney, Suffren, and Nelson still more fully based their tactical procedure on obedience to it. The importance of doing the same is not now likely to be disputed. Still, there are many things which prove that there is a far from uncommon inclination to disregard it, or, at any rate, a far from uncommon inability to understand it. The mounting of a very heavy armament in a single ship in addition to the other important material appliances that she must contain necessitates great displacement, and thus, indirectly but surely, reduces numbers. This constitutes an obstacle to the desirable tactical dispersion. It does more. It concentrates the instruments and tends to disperse their effect. It thus disregards both injunctions of the law. The disregard will continue until it is accepted that nothing should govern the designs of men-of-war but strategical and tactical considerations ; and that

whether your ship is bigger or smaller than one belonging to a rival is not worth thinking of apart from those considerations.

Tactical concentration of fire may be effected in two ways. The suitably dispersed but concentrating ships may be manœuvred to reach a position relative to their opponents from which they can pour a nearly simultaneous fire on a part of the latter. This was the method in the days of sails, when movement became greatly restricted soon after the battle had begun. It is still likely to prove effective, notwithstanding that engaging fleets may retain their power of movement much longer than their predecessors could. There is another method of concentrating fire on part of an enemy's fleet which would be quite as effective, perhaps even more so. That is the method adopted in crossing the T. This has, first of all, the great merit of permitting the enemy to be attacked from a point at which, whatever formation he may be in, he can direct in return only a small part of his fire. It has the further merit of enabling the whole of the crossing ships, as long as the enemy retains his formation, to engage a few of his at a shorter range

than some, perhaps most, of the latter's companions can engage any one of the crossers. If it does not remove altogether, it postpones for a considerable period of time all fear of the crossed fleet's torpedo-armament. The power of concentrating fire obtained by the fleet that crosses the T is especially formidable. It consists in a quick succession of cannonades directed, if desired, at the same object, as each crossing ship comes into action. It resembles the important land-service method of successive attacks by repeatedly arriving fresh troops.

Both sides will try to secure the position at which concentration of effect by one method or the other will be in its power, and each side will have to prevent the other from securing it as well as having to try to secure it itself. In the fencing that this will bring about, a mistaken movement by one side will be fatal to it if its opponent takes advantage of the opportunity thus given him. Ability to take advantage of an opening offered will depend on skill developed by practice, just as is the case when two antagonists are engaging with foils. The hope that deficient ability can be made good by superior speed of the ships to be manœuvred is not likely

to be fulfilled. Any quality—superior speed or other—that a ship can be given will be used to better effect by an able commander than by one who is his inferior in ability. The impossibility of increasing the speed except at the cost of some other quality should always be reckoned with: as, also, should the certainty that whatever superiority you wish to have will soon be neutralised or converted into inferiority by the shipbuilding policy of rivals.

When a considerable speed superiority is attained, the cost in the necessary diminution of other qualities must be very great. This is generally recognised, and a superiority exceeding one-sixth in ships of a similar class is rarely demanded. Close investigation of the results of having speed superiority to that extent makes it appear that the advantage would not be sufficient to have any decisive influence in an engagement where both sides are resolute in the intention to fight. Change of range—with the superiority of speed above specified—occurs comparatively so slowly that length of time under fire and the extent of the arc through which guns can be trained are found to be much more important. It is

strange that the belief in the power of some element of naval material to compensate for tactical mistakes—which lurks in the minds of those who hold it, rather than is acknowledged by them—it is strange that this belief does not extend to the case of superiority in arcs of training of guns. It would be quite as reasonable as in the other case. The mischief caused by belief in the efficacy of mere material in counterbalancing lack of human ability is great, because it affects every branch of the naval art. It is never greater than when those who are under its influence suppose themselves to be uninfluenced by it.

The gradual increase in the distance at which fleets engage appears to be quite independent of the introduction of any weapon but the gun. Recent battles have been, and those of the future are likely to be, fought when the opposing forces are considerably outside effective torpedo range, but this is not a result of the introduction of the torpedo. It is the result of the successive lengthening of the effective range of guns. A moment's consideration would bring conviction that naval Powers would not be unanimous in trying to

increase the range of the guns mounted in their ships if they had no intention of availing themselves of the increase when made. The removal of every torpedo from battleships and cruisers would not have the effect of decreasing by a yard the distance at which naval actions will be fought, either by fleets or single ships. In land battles, in which torpedoes are not used, the distance at which combatants engage has lengthened in the last half-century proportionately as much as has been the case on the sea. Yet the principles of tactics have been no more affected by enormously increased range of ships' guns than they have been by the introduction of new modes of propulsion and greatly increased speed.

The tactics of battle apply not only to actions between fleets, but also to actions between two ships. In this case there is, of course, no question of converting general inferiority of force into local superiority. If of a pair of combatants one is more powerful than the other, the disparity will continue to exist unless or until the weaker—without herself suffering materially—has battered the stronger into an equality with herself. Experience, even of recent date, has shown that

this is feasible. It follows, therefore, that there is a way—in single-ship actions—of neutralising an enemy's superiority of force. If the guns' crews on both sides are equally well trained, that way will be found in the display of higher tactical skill. It is not however to be disputed that, when one of two opposing ships is much more powerful than the other, that other will be at a great disadvantage, a disadvantage less easy to redress than in the case of two fleets engaging. It is probably to a wrong deduction from this that we owe the greatly increased and now enormous size of the modern cruiser. The deduction is wrong because it assumes that the powerful ship will always meet the weaker one that she wants to meet. The restriction on numbers which increased size inevitably causes will render this so improbable that meetings on the terms desired will necessarily be rare. On such a wide expanse as the ocean there is only one plan of making a meeting between your cruisers and the enemy's reasonably probable, and that plan is to have many of them. If it is the enemy who has the few big cruisers, it may be taken as virtually certain that the great majority of your more numerous cruisers will

not be interrupted in their work by his. When he does fall in with any, he—having the more powerful ship—may be expected to get the best of it. There are no means of preventing it until someone discovers a way of making it certain that the ships of one side shall do their proper amount of work in war and yet never fall in with a stronger enemy. When this is discovered naval warfare will cease.

Operations in which the torpedo is used by one side as the principal weapon constitute a special branch or division of naval warfare. Like all special branches of an art—guerilla or partisan warfare is an instance in campaigns on land—these operations are practicable only in restricted circumstances. Unless the circumstances are specially favourable to the weapon, the operations will not, because they cannot, be undertaken. It is easy to form a conception of very active hostilities in which an opportunity for the use of the torpedo would never arise. That one would arise with anything like frequency, even in a prolonged contest, may be looked upon as highly improbable. What is it that torpedo operations are intended to effect, and how is it to be effected? They aim at the

destruction of an important part of an enemy's fleet by stealth. The completely successful torpedo attack would be one in which the craft using the weapon could get quite unobserved within range of the ship to be assailed, and could launch torpedoes with full effect and get away unscathed. In its essence this mode of warfare is exactly like that in which a small band of men on shore should creep stealthily within an enemy's lines, place a fire-brand beneath a magazine of stores, and retire unseen.

Both kinds of operations are perfectly legitimate, and demand for their execution an exceptional amount of coolness and resolution. It is, however, intended that they should, if possible, be carried out without fighting. Torpedo-craft, it is true, have an armament of light guns; and the intending incendiaries of the magazine would at least be armed with revolvers; but it would be considered a misfortune if it were necessary to use the arms of either class, more especially before the main object of the proceeding had been effected. If defence against torpedo attack be merely of a practically passive nature, assailants—in conditions of light favourable to them, and especially submarine

craft—can get within a moderate distance of their prey unseen ; and could therefore accomplish undisturbed an important part of their work. Recognition of this has led to the introduction of anti-torpedo craft, or destroyers, which originally were devised for the express purpose of making torpedo-craft themselves objects of attack. This gives the latter an additional task to perform, as it imposes on them the necessity of industriously providing for their own safety. Here we are brought again into the domain of the ordinary tactics, in which one side will assail and the other side will defend by regular fighting. The accepted tactical principles will apply here as in other cases.

The use of torpedo-craft to complete the destruction of hostile ships already gravely injured by gun-fire in battle is not so much a matter of tactics as of expediency. If it is determined to send the disabled ships to the bottom, this can be quite as effectually done with guns of sufficient calibre as with torpedoes ; but the former method would demand an expenditure of ammunition that could not be spared or might not be found in the magazines

of ships that had already gone through some part, if not the whole, of an engagement.

It is not easy to see—though, of course, there may be reasons of the moment—why a ship too much disabled to be in a condition to escape should be sunk. If she is sunk she cannot be made a prize. If her crew are determined to sink her rather than surrender, the end—namely, her loss to her own side as part of its force, to the other side as a prize—will be exactly the same; whilst the victors will have saved one torpedo and very likely several. It is therefore expediency, and not tactics, that will govern the case.

Even if we could believe that tactical principles are so far understood and accepted that further inculcation of them is unnecessary, we should still have to face the obligation of making known the methods of putting them into practice with the material of the day. That some part of this obligation may be discharged by the process of instruction in schools cannot be disputed. We get upon much more debatable ground when we consider the extent to which this school instruction should be carried and the value to be assigned to it. Instruction of the

kind must be more or less formal—that is, rooted in its nature—and it has an ineradicable tendency to degenerate into downright formalism. The tendency may be checked, as regards the particular instruction under notice, by frequent exercises of a practical kind at sea ; but even these will not check it unless it is understood from the first that they are of greater importance than any of the instruction that can be given in the schools. The latter should be regarded as entirely secondary and subsidiary to them. A school of strategy and tactics is like a two-edged weapon which, unless used with unsleeping caution, will hurt the hand that wields it. There is more than one case on record of an armed force, full of brave, talented, and zealous men, being rendered grievously inefficient by the methods of instruction to which it was subjected.

In a school the lessons of naval history—so indispensable to efficiency—may well be taught ; but the teaching must not profess to draw from history more than it can give. The appeal to history ought to be the appeal of people who look for principles, for those eternal laws which retain their validity irrespective of changes of

time and material, and which will retain it as long as men remain what they are and have always been. Schools have often been and may again be nurseries and hotbeds of heresy. The partition that separates the professor from the commentator is very thin, and it is often from the ranks of the commentators that promulgators of heresy come. Where the subject is one that does not allow the instruction in it or the comments on it to be put to an exhaustive test till too late for amendment, the danger that heresy will creep in and spread unobserved is great. The value of the strategy and tactics in favour in a school cannot be exhaustively tested till war takes place. We can, it is true, do something to prevent mischief by maintaining in their proper position exercises of a practical character at sea ; but what guarantee have we that in this case, as in the case of other schools, the scholastic process, comfortably carried out on shore with no inconvenient blue-water fact or condition to controvert the teacher of the moment, will not continually gain upon the other? The founders of a school usually proceed cautiously. Nevertheless, the most cautious of them cannot avoid bequeathing to

successors certain *dicta* which few newcomers would be able, and still fewer would be willing, to refute at first. Those *dicta* soon pass as accepted maxims, and in time a body of doctrine is formed which may be and, alas! probably will be, quite heretical and unsound, but which all the influence of the school will be exerted in maintaining, whilst those who venture to question it will be branded as irreverent. History rightly interpreted, if it cannot correct this, will at least show us how likely it is, and serious will be the result if a resolute stand is not made against it.

CHAPTER XI

CONCLUSION

WE are often told—so often, indeed, that the iteration has become disagreeable—that we are living in a scientific age. The remark is made with especial frequency as regards navies. A speaker with nothing to say, but wishing or obliged to make remarks in public on naval affairs, almost invariably tells his audience that a knowledge of science is now necessary to the naval officer. That it was not always necessary he asserts by implication; but why it should not have been necessary no one has yet ventured to say. A statement so commonly uttered that it may be classed as a stock phrase is likely to escape the examination to which it ought to be submitted. Familiarity with some particular collection of words will often induce us to let it pass without remark, and to accept what it is supposed to mean without question.

We thus run the risk of putting a weapon into the mischievous hands of the ignoramus or the faddist, or the still more mischievous hands of the charlatan.

When we inquire into the meaning given to the expressions, 'Science,' 'Scientific Training,' 'Necessity of Scientific Study for Naval Officers,' we find that it is nothing more than the inclusion, in a course of instruction, of certain branches of natural science. If the curriculum of studies embraces electricity, applied mechanics, chemistry, &c., all that is necessary is held to have been done. That there can be anything deserving the name of science outside these and cognate subjects is tacitly and nearly always ignored. The belief that the welfare and progress of mankind depend upon the number of lads that can be persuaded or forced to attend lectures on chemistry or applied mechanics is quite modern. It is not necessarily unsound because it is modern, nor is it on that account necessarily sound. The subjects mentioned are of importance—indeed, of great importance—but there is no need of exaggerating it at the expense of others. When a belief is novel and at the

same time so general that it passes almost unquestioned, it is desirable that its claims to acceptance should be rigorously investigated.

We are accustomed to say that taste changes. It would be more correct to say that fashion changes ; and as taste influences the few and fashion the many, the latter temporarily overwhelm the others by sheer numbers and by the volume of noise that can be emitted by a multitude. The great majority of mankind in matters of taste will always wish to shout with the biggest crowd just because it is the biggest. The rule holds good as to things great and small—from architecture to shirt-collars. Even in such things as the training of the officers and men of a navy, or the conduct of war, fashion has immense influence. As in the physical domain the tendency is to follow the line of least resistance, so in the moral and intellectual it is to follow the line of least exertion. It is incomparably more easy to accept what nearly everyone, with more or less vociferation, professes to think than to engage in the mental labour of thinking for oneself. In addition to this there is the widely spread terror of being

regarded as eccentric if you do not fall in with the prevailing mode.

The greatest of men would dislike being considered an oddity ; and indeed that would impair his influence. The most eminent masters of the art of war have been indistinguishable from their contemporaries in all the common affairs of life. In ordinary social intercourse their intellectual superiority to their fellows was apparent enough ; but that does not constitute eccentricity. In most things they conformed to the standard of the age. A distinguished historian has observed that had Napoleon lived in the ninth century and not when he did, he would have carried off from Italy corpses to supply relics, instead of works of art. It may be added that had the great soldier lived in the fifteenth century he would have carried off manuscripts of Greek and Latin classics. Had Nelson lived in the twentieth century, we may take it for certain that he would not have dined, as in fact he used to do, at 3 P.M. Frederick the Great in our days would not have preferred, as he did, the French language to the German. Each one of these great commanders was simply

following the fashion of his day. In one thing, however, they departed from it without the smallest hesitation. They displayed an independence of judgment and action amounting to eccentricity in the conduct of war. So did Sir Francis Drake in 1588. They were conservative enough as to unchanging principles ; but they saw that with new instruments new methods were indispensable.

This is the lesson to be learned from the study of their careers. On naval officers is laid the heavy responsibility of training the crews of the fleet for war and directing the war when it does come. They ought to make themselves the masters, not the slaves, of the prevailing fashion. An examination of our recent schemes of naval education and a comparison of them with contemporary educational methods of civilian institutions will bring to light the great influence that fashion has had upon the former. To plead that the fashion of the day has been followed, and to point to the fidelity of the imitation, will not absolve naval officers from their responsibility for results when the supreme test is applied. Grant that we cannot avoid taking, at least to

some extent, the colour of our surroundings, that the fashion of the day may often have in it something well worthy of adoption, we must still justify our action as regards each detail in which we have followed it. Did we copy such or such a process because we had satisfied ourselves that doing so would lead to efficiency in war or merely because we saw that it was in favour with our contemporaries?

The case of training has been specially noticed because it is peculiarly illustrative of habits of the time; but similar reflections might have been made on other naval subjects. That it should be so is due to the rarity of the scientific spirit. It is a momentous fact that, in spite of the great modern extension of instruction in science, the scientific spirit should be as uncommon as it is and so utterly incapable of making head against mere fashion. This is conspicuous in the case of naval *matériel*. What one navy introduces nearly all other navies—no matter how great the difference in essential conditions—strive to get. We are living in a credulous age, and credulity is the parent of superstition. Anything in print, from a scandalous story to a solemn

claim of healing-power, secures unreasoning and therefore superstitious belief. Never in the history of the world did false prophets or quacks have a better time than they have in this age which we love to call scientific ; and what is to be seen in circles external to it is reproduced with momentous fidelity within the naval profession.

Warfare is a practical art ; but it must be considered and dealt with scientifically. This will not be done until those who have to consider and deal with it take a proper pride in their art. It is not a mere pale reflection of the conceptions and practices of pacific life. It has principles and processes peculiarly its own, and efforts to make them approximate to those belonging to other provinces of human activity must issue in failure. Take from any or every other art or employment what will help towards efficiency in war, not because it is to be found in the other art or employment, but for the simple and only reason that beligerent efficiency will be advanced by the transfer.

To make the selection may at first sight appear difficult. The difficulty will vanish if

the object in making the selection is continuously kept in view. We do not want to turn out among those who will have the direction of a navy, men who are primarily mechanics, or chemists, or astronomers, or mathematicians. What we do want to turn out is men who will so handle the naval forces entrusted to their charge that they will set at naught all the plans of the enemy. It is beyond our power to turn out men with a genius for war. These happen rather than are made by human arrangements. The infrequency of the emergence of genius warns us that we ought to do our utmost to give the average commander the best possible equipment for his task. Because so commonplace an admiral as Hughes had grasped the principle that if you wish to beat your enemy you must fight him, he was able—with the help of the half-hearted support given to his great antagonist—to withstand all the efforts of such a genius as Suffren. The incapacity of Suffren's subordinates to understand his methods, and consequently to give him adequate support, would not have saved us from defeat at Suffren's hands had our admiral not understood that, in many circumstances of war, sturdy pugnacity is

not likely to go unrewarded. Well-instructed mediocrity unsupported by extraneous conditions will never be able to vie with genius; but then, as we have seen, the former may have the support that goes far towards putting the two on a footing of equality, and an encounter with genius is not the rule, but the scarce exception.

In the meantime let us remember that genius appears in quarters where it was little expected. What reason was there to suppose that Russia would have produced a Suvoroff, or Corsica a Napoleon Bonaparte; that Austria would have produced a Tegetthoff, or Japan a Togo? We can count a possible enemy's ships and guns and calculate the number that he will be able to put into line, but we cannot forecast the ability of his commanders. We can, however, avoid the mistake of under-estimating it, a mistake which a navy with a long and glorious history is very likely to make. Drawing too largely on the merits of predecessors and the conceit thereby engendered are the failings of *epigoni*.

As has been repeatedly suggested in these pages, the corrective is to be found in the study

of history. The more we study that, the more likely will be the abandonment of the habit of thanking Providence that we are not as other naval men are. We do not go up to any temple to express this self-sufficient gratitude. We can do it more easily and give the expression a wider circulation by the use of paragraphs in newspapers. There has been apparently a recent revolt against the doctrine that good wine needs no bush. At any rate there is a revolt against its application in the cases of good shooting and rapid coaling. To see ourselves extolled in print is all the pleasanter when there is an indirect reflection on the performances of other navies, whose real defect after all may be not bad shooting or dilatory filling of bunkers, but reluctance to advertise results. History will convince us that a serious enemy is not to be intimidated by boasting any more than by the long-abandoned Chinese practice of painting a tiger's face on a shield. Boasting is amongst the belligerent methods of primitive barbarism. When groups of armed savages, despite mutual intentions to the contrary, happen to run against each other, chosen warriors on each side step to the front, boast

of their own prowess, and disparage that of their opponents. It is not easy to justify mimicry of this practice by those who say that they are living in a scientific age.

Perhaps people may be induced to see that there is a science of history—even of naval history—as well as of other things. Indeed one may go so far as to say that framers of naval education schemes who are unaware of this lack the faculty of taking a wide view of affairs and are still lingering at a low stage of culture. It ought, however, to be plain to all that instruction in naval history can be made a matter of scientific method. Like everything else, it can be taught intelligently or unintelligently. Nothing could well be more unintelligent than to force the teaching of it. Direction of study, not cramming, is the real need. Students of naval history who are encouraged—trained, if the word is preferred—to draw inferences themselves, will derive far greater benefit from their studies than those for whom inferences have to be provided by instructors. There will be no one to tell those who are taking part in a sea-fight that this proceeding is wrong and that other one right; that this movement is

preferable to that ; or that the success or failure of the moment is due to adopting or declining to accept a particular formation. These lessons will be driven home by the hard logic of the enemy's fire. Officers habituated to wait until conclusions have been pointed out and explained to them by their instructors, are not likely to have the promptitude which makes efficient commanders in war.

Those, on the other hand, who have been taught to trace for themselves cause and effect in the records of naval warfare will not take part in hostilities altogether unfamiliar with the necessary mental process. In their case the bewilderment that confrontation with novel circumstances commonly occasions will be less intense than in the case of others not so taught. This shows us what we have a right to expect from the naval historian. We cannot reasonably demand of him more than fidelity and lucidity of narrative. Let him give us the facts in plain language, and students likely to derive any benefit from the perusal of his work will themselves be able to do the rest. Except when a writer of naval history has considerable naval experience—a combination, as the

instance of A. T. Mahan shows us, not unknown, though very rare—the historian had better not pose as a strategist or tactician. In the majority of cases the value of a history is in the inverse ratio of the amount of strategical and tactical instruction which it professes to give. The naval historian who has no naval experience can and, if he is accurate and lucid, almost certainly will produce a valuable work ; but it is on condition that he leaves strategy and tactics alone. If he insists upon expounding them, he may add to the gaiety of readers ; he will do but little for their instruction. The lay historian who essays to teach strategy and tactics will be more likely to produce a chuckle than conviction.

Naval history is not a mere record of battles or, indeed, of campaigns. It covers a much wider field ; and with its help we should be able to discern the merits or the vices of systems of administration, organisation, equipment, and training. When it should begin and when it should end must depend on the information to be derived from the survey of different periods. The story of the Græco-Persian wars is not too ancient ; the story of

the Russo-Japanese war is not too recent, if we can find therein the teaching that will fit officers and men to fulfil their appointed tasks. Naval history is but a branch of the history of war, and the study of it will be incomplete if the branch dealing with war on land is left unnoticed. The two cannot be kept entirely separate. Men whose profession obliges them to serve at sea will devote special attention to the branch concerning their own work, but they need not neglect the other.

The annals of war either by land or sea will be most easily understood by those who have some knowledge of civil history. Will any practicable scheme of naval education permit the introduction of sufficient historical study? Is not the list of subjects already so long that no addition to it is possible? Satisfactory answers can be given to these questions. The length of a list of subjects in which instruction is given depends upon the extent to which study of its contents is made compulsory. Efforts to teach everybody the same things and nothing else are likely to fail because no allowance is made for alternatives. Lists longer than those at present existing would not

be found too full if reasonable latitude of choice were conceded to students. It is surely not a wide view of naval education which can embrace only the method of turning out officers varying as little as bullets turned out from a mould. In war every faculty will be called upon—some in one case, some in another. The wider the culture that a service enables its members as a whole to acquire, the more efficient is that service likely to be. If of two officers who are, say, consummate electricians, one is acquainted with a particular additional subject and the other is not, the former will be the better man. This is true even when the subject is not of direct naval importance, provided that acquaintance with it has been due to a real love of knowledge.

The different sections of instruction comprised in a system of naval training or education are means, not ends. The object is not gained when—if it ever can be so—we have produced perfect mechanics, perfect physicists, perfect chemists, or perfect students of history. What is wanted is men so educated and trained that they will be able to carry out, plan, or supervise the operations of naval warfare.

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